Final Environmental Assessment

P-327 Pier 12 Replacement and Dredging Naval Base San Diego (NBSD)

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P327 Pier 12 Replacement and Dredging
Naval Base San Diego (NBSD)

ABSTRACT

The United States Department of the Navy (Navy) has prepared this Environmental Assessment (EA) to evaluate the potential environmental consequences for a project (P327) at Naval Base San Diego (NBSD), California, that would involve demolition of an inadequate existing pier (Pier 12), dredging in berthing and approach areas for a new pier, dredged material disposal at an approved ocean disposal site and permitted upland landfill, construction of a new pier and associated pier utilities, including upgrades to the electrical infrastructure at the adjacent Pier 13, and re-use of demolition concrete to create fish enhancement structures (artificial reefs). The purpose of the proposed action is to address the current and impending shortfall at NBSD of pier infrastructure necessary to support modern Navy ship classes with deep draft-power intensive or power intensive requirements.

The proposed action would demolish Pier 12 and construct a single-deck replacement pier and associated facilities. All debris except for concrete planned for creation of fish enhancement structures would be recycled or disposed of at a landfill, consistent with Navy policies and procedures for solid waste diversion. Dredging to a depth of -37 feet (-11.3 meters) Mean Lower Low Water in berthing and approach areas for the new Pier 12 would generate an estimated 479,125 cubic yards (366,317 cubic meters) of dredged sediments. Based on sediment testing, up to 433,965 cubic yards of dredged material would be suitable for disposal at a designated ocean disposal site, whereas 45,160 to 63,805 cubic yards would require upland disposal at a permitted landfill.

This EA was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), 42 United States Code §§ 4321-4370d, as implemented by the Council on Environmental Quality Regulations, 40 Code of Federal Regulations Parts 1500-1508, and evaluates the potential effects of the proposed action on the following resource areas: topography, geology/soils, and seismicity; water resources; air quality; marine sediments, bathymetry and water quality; marine biological resources and essential fish habitat; terrestrial biological resources; land use; socioeconomics; transportation; noise; aesthetics and visual resources; cultural resources; public access; safety and environmental health; and utilities.

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared by the Department of the Navy (Navy) in accordance with the National Environmental Policy Act (NEPA) of 1969 to assist United States (U.S.) Navy officials in making a decision about whether or not to construct and operate a project (P-327) that would replace Pier 12 at Naval Base San Diego (NBSD), California. The proposed action would involve demolition of an inadequate existing pier (Pier 12), dredging in berthing and approach areas for a new pier, dredged material disposal at an approved ocean disposal site and permitted landfill, construction of a new general purpose berthing pier and associated pier utilities, including upgrades to the electrical utilities at adjacent Pier 13, and construction of fish enhancement structures (FES) using concrete debris from pier demolition (Figures ES-1 and ES-2). The purpose and need and a description of the proposed action, as well as reasonable project alternatives, discussed in the following sections are based on information provided in form DD 1391 for P-327 (DoN 2010a).

PURPOSE AND NEED OF THE PROPOSED ACTION

The purpose of the proposed action is to address the current and impending shortfall at NBSD of pier infrastructure necessary to support modern Navy ship classes with deep draft-power intensive or power intensive requirements. The project is needed because the existing berthing facilities at NBSD are not adequate to support the mix of Pacific Fleet ships that are currently homeported or require temporary facilities in San Diego Bay, and the existing Pier 12 is not suitable for berthing and servicing ships of today's fleet. The existing Pier 12 is inadequate to support modern Navy ship classes due to the following factors: (1) inadequate deck size and load capabilities to support modern ships and support facilities such as cranes; (2) insufficient water depth to support modern deep draft vessels; (3) structural deterioration of the pier along with associated health and safety concerns for personnel during berthing operations, and non-compliance with current structural or seismic criteria; and (4) inadequate utilities, including power requirements and no oily waste system due to the narrow pier width and load restrictions (DoN 2010a).

Based on the continuing need for four berths to support modern and future classes of ships in San Diego Bay, failure to construct a replacement pier would not allow current missions at NBSD to be fulfilled (DoN 2010a).

REASONABLE ALTERNATIVE SCREENING CRITERIA

The following operational and environmental requirements were developed to identify reasonable project alternatives:

- Provide sufficient water depth (-37 feet [ft] mean lower low water [MLLW]) in a security zone as defined in 33 Code of Federal Regulations (CFR) 165.1104;
- Provide adequate space to accommodate ship Explosive Safety Quantity Distance (ESQD) arcs (defined as a semi-circular area with a radius of 1,250 ft [381 m] from the end of the pier) within a Navy-controlled area;
- Provide berthing and operational space for four modern Navy ships;

Figure ES-1. Location of Pier 12 at Naval Base San Diego.

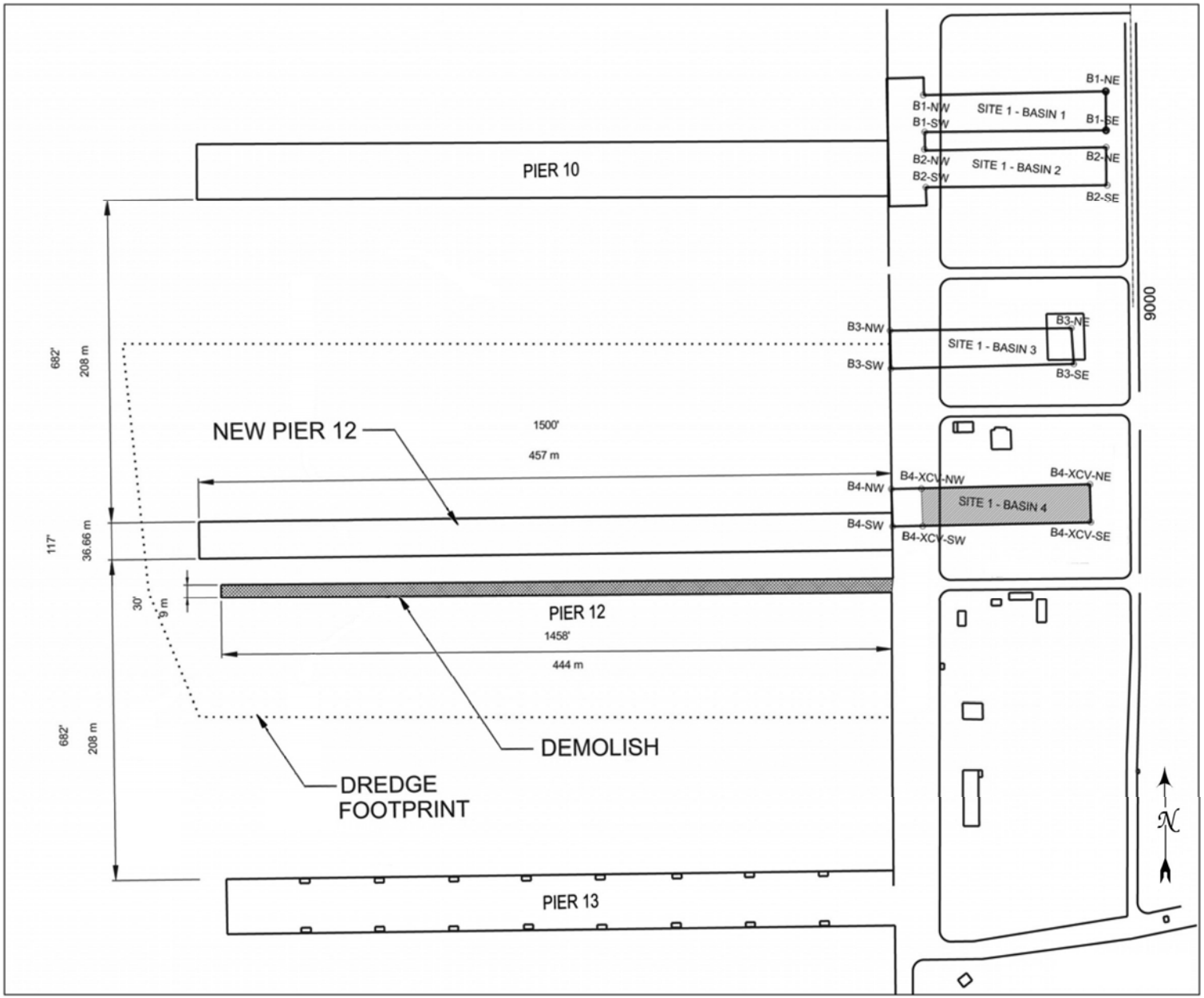

Figure ES-2. Site Plan for New Pier.

- Provide a berthing layout that complies with Navy specifications (MIL-HDBK 1025/1 Piers and Wharfs [para 2.2.3.3]) and can accommodate a 135 metric ton crane and a fire lane, as well as an oily waste recovery system and stormwater collection system;
- Provide access to shore infrastructure such as power, sanitary sewage, and water;
- Avoid or minimize potential risks and effects to biological resources, such as essential fish habitat (EFH), eelgrass beds, and nesting areas of sensitive bird species; and
- Have no potential to conflict with existing or proposed land or water uses, including training, such that these uses would not be able to take place.

Based on a review of available sites, the Navy determined that the existing Pier 12 site at NBSD represents the only reasonable location for the proposed action. No other location in reasonable proximity to Pier 12 would provide the required space, water depths, security, and infrastructure without the additional and considerable expense associated with leasing or acquiring such property/facilities. Moreover, using a location other than the site associated with the proposed action would amount to a duplication of present conditions, and thus would not be practical as an alternative. Further, a project that would renovate the existing substandard facility would not meet the project purpose and need. Under these circumstances, the proposed action is the only action alternative evaluated in this EA.

DESCRIPTION OF THE PROPOSED ACTION

The proposed action would demolish the existing Pier 12 at NBSD and construct a single-deck replacement pier and associated facilities for berthing four modern-class ships with deep draft-power intensive or power intensive requirements in the Pacific Fleet. Upgrades to existing electrical facilities at adjacent Pier 13, as well as construction of FES (artificial reef habitat) using concrete debris from pier demolition, are also part of the proposed action.

Pier Demolition

Existing Pier 12, which is 30 ft (9.1 m) wide by 1,458 ft (444.4 m) long, would be demolished prior to dredging for or construction of the new pier. Simultaneous demolition of the existing pier, dredging, and construction of a new pier may not be feasible (A. Sanchez, personal communication 2007). Prior to demolition, abatement of any existing lead paint and asbestos would be performed by a licensed abatement contractor. Pier 12 would be demolished from the outside in and from the top down. First, the fender piles and exterior appurtenances (such as utilities) would be demolished both above and below the pier deck. Then, the deck would be demolished using sawcutting and jack hammering. Subsequently, structural piles would be extracted with cranes and possibly jetting methods. Throughout the demolition, barge mounted cranes and scows would be used for removal and collection of demolition debris. Demolition of the existing pier would generate several types of debris, including: concrete, wood such as creosote-treated pilings, steel, and asphalt. The Navy would implement procedures for handling and disposal of wastes per the Navy's Waste Management Plan, San Diego Metro Area (DoN 2007a) to maximize the diversion of materials from landfills, particularly construction and demolition debris. Concrete debris would be used for creation of FES, as discussed below. Demolition and debris disposal is expected to take approximately seven months to remove all pier

deck material and pilings. Equipment would include a diesel-powered barge, barge and wharf cranes, tugboat, mobile construction equipment, and transport trucks.

Construction of Fish Enhancement Structures

As part of the proposed action, concrete debris (approximately 13,000 cubic yards [cy]) from demolition of the existing pier would be used to create FES at two locations that have been selected based on their location, bathymetry, and potential suitability to support artificial reefs (M. Perdue, personal communication 2007). One of the sites (South Ballast Point) is at the mouth of San Diego Bay and the other site (Le Meridian) is adjacent to the A-4 anchorage off Coronado near an existing reef. Selection of these sites as FES was agreed to by National Marine Fisheries Service, California Department of Fish and Game, and the Port of San Diego. The volume capacities of the South Ballast Point and Meridian FES sites are 8,500 cy and 4,900 cy, respectively. Therefore, the two sites would have sufficient capacity to accommodate the approximately 13,000 cy of concrete debris generated from demolition of the existing pier.

Dredging and Dredged Material Disposal

Dredging to a depth of -37 ft (-11.3 m) MLLW in berthing and approach areas for the proposed, new Pier 12 would generate an estimated 479,125 cy (366,317 cubic meters) of dredged sediments. Based on sediment testing conducted in 2010 by the Navy (DoN 2010b), and in accordance with protocols of the U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE), up to 433,965 cy cubic yards of the dredged material would be suitable for disposal at a designated ocean disposal site, such as the LA-5 site located at 600 ft (183 m) depths off Point Loma. The remaining materials, ranging in volume from 45,160 to 63,805 cy, and consisting primarily of surface layer sediments from areas immediately adjacent to the existing pier, are unsuitable for ocean disposal and require upland disposal at a permitted landfill. The possible range in volumes for the upland disposal materials is based on the need to include some side slope and overdredge materials; however, the Navy would minimize the magnitude of this overage to the extent possible. USEPA and USACE concurred with this proposed dredged material disposal approach (email from USEPA dated 2 November 2010).

The dredging duration, based on use of a mechanical (clamshell bucket) dredge, is expected to be 270 days. Sediments suitable for ocean disposal would be placed in barges that would be towed to the LA-5 disposal site, where the material would be released. The maximum daily dredging production rate is expected to be 1,600 cy, which includes a single tug towing tandem, 1,000 cy capacity barges that have been loaded with approximately 800 cy. Barges would be equipped with electronic tracking devices to document that material releases occurred within the disposal site boundaries, as specified in the dredging permit.

Sediments for upland disposal would be dredged using a bucket dredge and placed in a barge that would be towed to an offloading site at the existing mole pier north of Pier 12. The dredged material would be offloaded from the barge using a crane and bucket and placed in a lined, confined drying facility (CDF) adjacent to the offloading site. The material would be dried in the CDF until it met the dryness requirement of the landfill, at which point it would be loaded into trucks and transported to the Otay Landfill. It is estimated that the maximum daily volume of material that could be loaded from the CDF into trucks and transported to the landfill is 1,629 cy, which represents 135 truck trips per day over 40 days.

The CDF would be located in a paved portion of the mole pier adjacent to the Paleta Creek Channel, immediately north of the project site. Prior to use, the site would be lined with an impermeable liner, and a dike/berm would be constructed around the site. The CDF would be 1.5 acres; however, only 1 acre would be used for drying sediments, and the remaining 0.5 acres would be used for handling and loading the sediments into transport trucks. Wet sediments would be placed in the CDF with a maximum thickness of 1 ft (0.3 m). Excess water from the wet sediments would be collected inside the CDF and disposed of to the sanitary sewer system. Water disposed of to the sanitary sewer system must meet sewer discharge limits set by the city of San Diego. Samples of CDF waters discharged to the sanitary sewer system would be monitored to ensure that that none of the water entering the sewer system during the time of construction exceeded limits set by the city of San Diego. Existing storm drains in or adjacent to the CDF would be covered, and no decant water would be allowed to drain out of the CDF or to a storm drain. Dried sediments would be transported by trucks to the Otay Landfill, which is a permitted Class III landfill in Chula Vista, California, approximately 11.6 miles from NBSD. Otay Landfill has the capacity to accept 1,500 to 2,000 tons per day of dried dredge sediments, which is adequate for the maximum daily volume of 1,629 cy (or approximately 1,950 tons, assuming a dry density for dredged sediments of 1.2 tons per cy) required for this project.

All dredged material disposal operations performed for the proposed project would comply with Clean Water Act Section 404 and be in accordance with a dredging permit issued by the USACE, and a Clean Water Act Section 401 water quality certification from the San Diego Regional Water Quality Control Board (RWQCB), as well as the acceptance procedures required by the landfill operators.

New Pier and Facilities Construction

The new replacement pier would be 117 ft (35.7 m) wide by a maximum length of 1,500 ft (457.3 m) (DoN 2004a). Compared to the existing Pier 12, the new pier would represent an increase in area of about 3.0 acres, based on an increase in width of 87 ft (26.5 m), and an increase in length of 42 ft (12.8 m). The pier would provide a minimum of two outer end pierside berths for modern Navy ships comparable in size to a multi-purpose amphibious assault ship, the largest ship that would be supported by the replacement pier. The inner berths would have enough room for two other modern Navy ships, such as guided missile destroyers. Structural piles (approximately 700 concrete) and fender piles (approximately 200 concrete and 200 composite) would likely be installed using a floating crane and diesel hammer. Jetting may also be used to install new piles. Pile installations would occur over a period of 120 days. Deck installation would occur over a period of approximately 180 days.

Shoreside excavation for the pier base would be approximately 50 ft by 50 ft and 10 ft (15.2 m by 15.2 m and 3 m) deep. An Installation Restoration (IR) site, referred to as Site 1 (Former Ship Repair Basin), abuts the landside end of the proposed Pier 12 (Figure ES-2). The Navy is managing the site under the Navy's Installation Restoration Program that provides for compliance under the procedural and substantive requirements of the Comprehensive Environmental Response, Compensation and Liability Act as amended by the Superfund Amendment and Reauthorization Act. During construction of the new pier, the Navy would require the construction contractor to develop and implement engineering controls and procedures that would ensure the water tight integrity of the quaywall is maintained, and that

hazardous materials contained by the quaywall are not released into San Diego Bay. The Navy conducted a study to examine the potential for the proposed project to negatively impact the structural integrity of the quaywall relative to hazardous material contained by IR Site 1 (DoN 2009). As a result of this study, a Structural Engineer has made a determination that construction of a new pier seaward of the quaywall should not have undesirable consequences to the quaywall. The study report is presented in Appendix D.

Based on the assessment of the stability of the quaywall at IR Site 1, dredging and construction of a new pier for the proposed project is not expected to cause contaminant releases to San Diego Bay (DoN 2007b). Although damage to the existing quaywall due to accidental impacts are unlikely, as a precautionary measure the Navy would implement a monitoring system to insure early detection of any impacts or damage to the quaywall from dredging or pile driving actions so that any release of contaminants to San Diego Bay is detected and response actions can be evaluated and implemented. The monitoring system would include inclinometers installed along the quaywall face to provide a record of any wall movement which could lead to contaminant transport from the basin into San Diego Bay. In addition, the Navy would use the SPAWAR Sensor Package to detect any groundwater discharge causing a change in seawater conditions next to the wall. The Navy also would collect water grab samples from the discharge of groundwater through the quaywall near the tide line. Water samples would be collected during the low tide period when discharge is strongest, and analyzed for water quality and volatile organic compounds. If groundwater discharge is suspected, the Navy would perform additional measurements using the ultrasonic UltraSeep system to quantify discharge rates and contaminant fluxes to the Bay.

Work proximal to IR Site 1 would be performed under the oversight of a California Certified Industrial Hygienist. The Navy would further require a site-specific Health and Safety Plan be developed that addresses and mitigates contaminants known to be within IR Site 1. The Health and Safety Plan would be signed by the Certified Industrial Hygienist and submitted for review to the Navy Environmental Health Center. The Health and Safety Plan would be implemented by the contractor during the field activities. Any personnel coming into contact with the material contained within IR Site 1 would be properly trained, and the appropriate level of protective clothing/equipment would be worn.

The Navy would adhere to the most stringent building code requirements found in the Uniform Facilities Code that incorporates the International Building Code and the American Association of State of Highway Transportation Officials, which is a set of codes mostly relating to transportation requirements for bridges and similar projects. Special construction features for the replacement pier would include installation of a stormwater collection system with an oil-water separator, and structural capacity for a 150 ton (136 metric ton) crane. Pier utilities would include potable water, sanitary sewer, oily waste, and compensating water systems. Additional ship-to-shore utilities would include electrical, telephone, cable television, fiber optic communications, Supervisory Control and Data Acquisition system for energy monitoring and control, and fire alarms. The project would support a future upgrade of ship-to-shore power from 480 volts to 4,160 volts to meet future power intensive Fleet requirements by providing spare ducts-conduits. The project would include the addition of four 480 volt skid-mounted substations, two industrial power substations, and four switches, and two 4,160 volt skid-mounted transformers at Pier 12, and one 4,160 volt skid type transformer with associated

equipment, cabling, and concrete equipment slab at Pier 13. Further, the existing South Cummings Substation feeder to Switch Station R (adjacent to Pier 12) would be upgraded from 800 amps to 2,000 amps to provide this type and amount of power to new Pier 12. Anti-Terrorism-Force Protection measures would include a security gate and fencing, pedestrian turnstile, watch tower, guard house, and high mast lighting, consistent with current security requirements.

As part of the proposed action, the existing ESQD arc that surrounds Pier 12 would be extended. The new ESQD arc would have the same radius as the existing arc (1,250 ft as measured from the outer corners of the pier and a point 1,250 ft in from the shoreline). The only difference in the ESQD arc would be caused by the increased width of the new pier from 30 to 117 ft. This would extend the arcs north and south over other piers. There would be no change in shoreward or bayward (westward) directions. The ESQD arc would not extend onto shore, and would not extend any farther out than the existing piers. Extending the ESQD arc would not change the pierhead bulk line, which corresponds to NBSD's ownership boundary.

New Pier Operations

No new ship homeporting actions are specifically planned as a part of the proposed project and no ship berthing operational details are presently known. However, the proposed project would allow the future-year berthing of newer, larger and more power intensive ships. As these newer, larger and more power intensive ships are homeported or berthed at Naval Base San Diego, NEPA analysis will be performed on a case by case basis. Therefore, ship operations are not addressed in this EA. This EA addresses potential impacts associated with pier demolition, dredging and dredged material disposal, new pier construction, and creation of FES.

NO-ACTION ALTERNATIVE

Under the No-Action Alternative the proposed action would not occur, meaning no pier replacement, dredging, dredged material disposal, or FES creation. Because the existing pier was originally constructed to harbor the Navy's "Moth Ball Fleet", and is not suitable for berthing and servicing the ships of today's fleet, the No-Action Alternative would not allow NBSD to meet its mission of accommodating modern Navy ships (DoN 2010a). The existing pier would continue to degrade until all activity is restricted from occurring due to deteriorated and unsafe conditions.

ALTERNATIVES CONSIDERED BUT ELIMINATED

As part of the Navy's decision-making process, various alternatives have been considered that could potentially accomplish the project purpose and need using approaches that are both similar and dissimilar to current approaches. These alternatives are discussed in DoN (2004a, 2010a). Considerations included onsite alternatives, such as a different design for the pier (double-deck instead of the proposed single-deck), renovation and modernization of the existing pier or other piers at NBSD, and offsite alternatives such as leasing a pier or alternative sites, as described below.

Onsite Alternatives

Pier Design

A double-deck pier design was considered that would accommodate berthing requirements for four modern-sized ships, similar to the proposed action. It would be the same length as a single deck pier (1,500 ft [457.3m]), but would be narrower (93 ft [28.3 m] versus 117 ft [35.7m]) because the utilities would be located on the lower deck. However, a double-deck design would not be as efficient for handling many of the classes of ships that require support at NBSD. For example, the tidal range in San Diego Bay would cause interferences between mooring lines and deck elevations relative to pier appurtenances, and deck elevations would not allow for the use of ramps (sideport ramps) for some classes of ships. The double deck pier would also be a more expensive facility, with little additional benefit. Based on these considerations, a double-deck design is eliminated from further consideration in this EA because it would not fulfill screening criteria related to operations, such as the need for ramps to support some classes of ships as well as tidal range constraints.

Renovation-Modernization of the Existing Pier 12

Renovation and modernization of the existing, deteriorating Pier 12 was considered but eliminated from further consideration because operational and support needs for modern Navy ships would require construction activities similar to those required for a new pier. For example, the existing pier would require widening to an appropriate size (e.g., 117 ft [35.7 m]); structural repairs (pier deck, underdeck, pile caps, and piles); addition of a new fendering system; installation of additional utilities to support ship services; and dredging to project depths (-37 ft [-11.3 m] MLLW). Therefore, because renovation and modernization would be generally equivalent to construction of a new pier, although substantially less efficient and less reliable than a new pier, this is not considered a viable alternative.

Alternative Site at NBSD

Pier 14, which was located south of the proposed Pier 12 site at NBSD, has been demolished. Constructing the replacement Pier 12 at the historic location of Pier 14 would require an ESQD arc that extended 1,250 ft (381 m) beyond the pier. However, this ESQD arc would extend into the Knight and Carver Custom Yacht Parcel in San Diego Bay and the National City Marine Terminal waterfront and would result in potential conflicts with developed private property that is not under Navy control. DoD Standard 6055.9-STD states that land encumbered by ESQD arcs must be owned by the U.S. Government (DoN 2006a). Therefore, construction of a replacement Pier 12 at the previous Pier 14 site is eliminated from further analysis based on the potential conflicts associated with the ESQD requirement.

Offsite Alternatives

Leasing

Leasing instead of constructing a new pier is not feasible because there are no facilities available in the San Diego region to accommodate berthing requirements of the Navy, including appropriate utility services, ESQD arc requirements, security, and operational considerations, as judged by comparison with the screening criteria.

Alternative Sites

Four San Diego installations that are offsite from NBSD were considered for the proposed replacement pier: (1) Naval Base Point Loma; (2) Naval Air Station North Island; (3) Naval Amphibious Base Coronado; and (4) Navy Broadway Complex. The first three installations are eliminated from consideration because the berthing and operational space at these sites is already fully loaded with ships, submarines, or aircraft carriers. Further, based on existing ship-loading plans, these installations have no surplus area that would be suitable for constructing the type of pier necessary to fulfill support needs for berthing four modern Navy ships as required by the proposed action. Therefore, these sites are eliminated from further consideration.

The Navy Broadway Complex is located on only 5.9 acres of land, which would represent insufficient space for a replacement pier and adjacent wharf, warehouse, and maintenance areas. The Navy Broadway Complex also would have inadequate truck access to the pier area from the public street that passes within a few feet of the piers. Additionally, the Navy Broadway Complex may be subject to commercial redevelopment in future years and may not be available. Therefore, this site is eliminated from further consideration.

SUMMARY OF ENVIRONMENTAL IMPACTS

Impacts analysis performed in this EA has found that implementation of the proposed action would not result in significant impacts. Similarly, implementation of the No-Action Alternative also would not result in significant impacts, except for increased susceptibility of the existing Pier 12 to further deterioration and potential exposures of personnel to unsafe working conditions. The environmental consequences associated with implementation of the proposed action and No-Action Alternative are compared in Table ES-1. A detailed description and analysis is presented in Chapter 3, Affected Environment and Environmental Consequences, and Chapter 4, Cumulative Impacts.

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
Topography, Geology/Soils, and Seismicity	The proposed action would not result in significant impacts to geological resources because no resources exist at the project site or disposal sites that would be affected by the proposed action. The project would not create a risk to structures or personnel because the design and construction of the replacement pier would adhere to the most stringent building code requirements in the Uniform Facilities Code.	The No-Action Alternative would not alter existing facilities. The existing Pier 12 structure would continue to degrade and would expose personnel to unsafe working conditions.
Water Resources	The proposed action would not significantly impact surface water or groundwater because standard erosion and pollution control measures would be implemented. Control measures to protect water resources would include: implement a construction stormwater pollution prevention plan and best	The No-Action Alternative would not generate wastes or otherwise disturb water resources. Significant impacts would not occur. However, beneficial impacts from an improved storm water

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	management practices; prepare and implement a debris management plan and spill prevention, control, and countermeasures plan; monitor the quality of decant waters discharged from the confined drying facility to the sanitary sewer; and incorporate a stormwater collection system into the design of the replacement pier. The proposed action would require construction activities (e.g., excavation and/or trenching) within the IR Site 1, Basin 4. However, the construction contractor would be required to incorporate engineering controls and procedures that would ensure that the integrity of the quaywall would be maintained and contaminant releases to the Bay would be prevented. The Navy would install a monitoring system to insure early detection of any impacts or damage to the quaywall from dredging or pile driving actions and detection of any release of contaminants to San Diego Bay so that response actions could be evaluated and implemented.	filtration system also would not occur.
Air Quality	Estimated emissions as a result of the proposed action would be below *de minimis* levels; therefore, a conformity analysis would not be necessary. The proposed action would not result in significant impacts on air quality.	The No-Action Alternative would not result in any activities or air quality impacts that differ from existing conditions. No impacts would occur.
Marine Sediments, Bathymetry, and Water Quality	The proposed action would not cause significant impacts to marine water or sediment quality because protective measures would be implemented during demolition and construction activities to limit dispersion of resuspended sediments, debris, and other construction materials and to prevent exceedences of dredging permit conditions. Protective measures would include the following: asbestos and lead-based paint abatement would be conducted by a licensed contractor prior to pier demolition; a debris management plan would be prepared and implemented during in-water construction; debris created by construction activities would be quickly contained and disposed of, and floating booms would be used to prevent dispersion of materials beyond the project site; a spill prevention, control, and countermeasures	The No-Action Alternative would not generate wastes or otherwise significantly disturb marine water and sediment quality. Significant impacts would not occur.

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	plan would be prepared and implemented; stormwater runoff during construction would be regulated by a construction stormwater pollution prevention plan and best management practices; a silt curtain would be used at the project site during in-water construction in areas where there is a potential for turbidity and water quality monitoring would be conducted in accordance with a dredging permit and monitoring and reporting plan; the construction contractor would incorporate engineering controls and procedures that would ensure that the integrity of the quaywall is maintained and contaminant releases to the Bay from IR Site 1 would be prevented; and the Navy would install a monitoring system to ensure early detection of any damage to the quaywall or contaminant releases to San Diego Bay so that response actions could be evaluated and implemented. Therefore, no significant impacts to marine sediment and water quality and bathymetry would occur.	
Marine Biological Resources	The proposed action would require dredging that would remove bottom sediments and thereby disturb the benthic habitat within the dredging footprint. Results from sediment testing indicate that exposures to suspended sediments during demolition and dredging activities would not cause significant toxicity to marine organisms. Also, a debris management plan and spill prevention, control, and countermeasures plan would be prepared and implemented during demolition and construction activities, and a silt curtain would be used at the project site during in-water construction in areas where there is a potential for turbidity to prevent water quality impacts with the potential for affecting marine organisms. The project also would create noise and other activities that would discourage site use by fish, birds, turtles, and mammals during pier demolition and construction activities. However, these species are mobile and would be able to avoid the site, and then return once the replacement pier is completed. The Navy would conduct a survey for Caulerpa at both the pier replacement and FES sites prior to	The No-Action Alternative would not alter the project site or result in any activities or operations that would alter or affect marine habitats or wildlife, or impact sensitive species. No impacts on marine biological resources would occur. However, beneficial impacts from the creation of fish enhancement structures also would not occur.

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	initiation of in-water construction work. For the threatened and endangered species in the general project region, the Navy has determined that the proposed action may affect, is not likely to adversely affect the California least terns or Eastern Pacific green sea turtles due to implementation of the avoidance and minimization measures contained in the Navy's "California Least Tern Memorandum of Understanding (MOU)" and it's "Green Sea Turtle Informal Consultation"with the U.S. Fish and Wildlife Service. The pier replacement and fish enhancement structure sites are not within known nesting or high foraging habitat for the least tern, as defined in the MOU. The Navy would review the construction schedule prior to the start and during each phase of the project, and every effort would be made to compress or adjust the schedule to avoid or minimize intrusion into the tern breeding season. Also, a silt curtain would be used at the project site during in-water construction in areas where there is a potential for turbidity to minimize the potential for effects from increased turbidity of surface waters generated by in-water construction activities. The Navy also determined that the project would have no adverse effects on green sea turtles. Although no green sea turtles have been observed in the vicinity of the replacement pier, they have the potential to move through the project area. In-water noise levels associated with the proposed action are not expected to exceed Level A thresholds. Prior to the commencement of in-water construction activities, the waters in immediate area would be scanned visually for the presence of turtles and marine mammals. If these species are observed, construction would be postponed until the animals have left the area. The construction contractor also would be required to use a ramp-up procedure for pile driving to allow any undetected animals in the area to voluntarily depart. Potential adverse effects to EFH at the Pier 12 site would consist of a series of short, independent disturbances associated with non-continuous construction actions. The two EFH species that may occur in the area are highly	

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	mobile and capable of avoiding the project area during demolition and construction activities. The project site is not considered a habitat area of particular concern, and eelgrass does not occur in or close to the pier replacement site. The construction of FES using concrete debris from demolition of Pier 12 would result in a loss of soft bottom habitat with localized adverse effects to EFH related to loss of food resources for benthic-feeding fish; however, these effects would be offset by long term benefits from creation of these artificial reef habitats, which are known to be associated with increased abundance and diversity of fish, including EFH species. A pre-, post and three-year post construction monitoring program would be conducted to validate fisheries recruitment and productivity benefits from the FES. The Navy has determined that the anticipated effects on EFH would be short-term and localized due to the non-continuous nature of the construction activities, and EFH Conservation Recommendations would not be necessary to avoid, minimize, or mitigate adverse effects to EFH. The project would cause no harm, harassment, or take of marine mammals under the Marine Mammal Protection Act. Therefore, there would be no significant impacts to biological resources.	
Terrestrial Biological Resources	The proposed action would not affect terrestrial biological resources because sensitive plant species and threatened or endangered animals and their habitat do not occur within or near the project site. Therefore, there would be no significant impact.	The No-Action Alternative would not alter the project site or result in any activities or operations that would alter or affect plant communities or associated habitats or wildlife, or impact sensitive species. No impacts on terrestrial biological resources would occur.
Land Use	The proposed action would not cause significant land use impacts because construction and operation of the replacement pier would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project site.	Under the No-Action Alternative, there would be no change in existing land use conditions, and no conflict with any applicable land use plan, policy, or regulation. No impact would occur.
Socioeconomics	The proposed action would not cause	Under the No-Action

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	significant impacts to socioeconomic resources because construction and operation of the replacement pier would not restrict commercial or recreational activities, result in adverse effects on human health, or create any safety risks for populations in adjacent areas. Significant environmental justice impacts would not occur because the project would not have a disproportionately high and adverse impact on low impact or minority populations.	Alternative, there would be no change in existing conditions for commercial or recreational activities, human health, or safety risk, and no environmental justice impacts would occur.
Transportation and Circulation	The proposed action would result in small increases in truck volumes on selected roadways during construction activities, but these increases would not be significant because they would not result in loss of service on roadways or intersections. A Traffic Control Plan would be prepared by the construction contractor and approved by the Facility Engineering and Acquisition Division and Base Security prior to construction. The proposed action would not have significant impacts related to vessel circulation because the project would result in negligible and temporary increases in vessel traffic that would not interfere with other commercial, military, or recreational vessel movements within San Diego Bay or during transit to the ocean dredged material disposal site.	Under the No-Action Alternative, there would be no change to transportation infrastructure or ground or vessel traffic. No transportation impacts would occur.
Noise	Airborne noise impacts from the project would be less than significant because levels at representative receptor sites, such as residential areas, schools, and parks, in the proximate project area would be below the daytime weekday construction ordinance limit. Underwater noise from project demolition and construction activities would not exceed potentially injurious levels and would not adversely affect fish, marine mammals, birds, and sea turtles because these species are highly mobile and can avoid these discontinuous, temporary disturbances.	Under the No-Action Alternative, there would be no change in existing conditions for sensitive noise receptors, and no noise impacts would occur.
Aesthetics and Visual Resources	The proposed action would not result in significant impacts to aesthetic and visual resources because the replacement pier would be compatible with the existing visual quality and character of the project site.	For the No-Action Alternative, there would be no change in the existing aesthetic quality of the project site, and no visual resource impacts would occur.
Cultural Resources	The proposed action would have no effect on	Under the No-Action

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	cultural resources because there are no identified archaeological sites or other historic properties located within the project footprint.	Alternative, no construction activities or ground disturbances would occur. Therefore, no impacts on cultural resources would occur.
Public Access	The proposed action would occur within an area surrounded by a security barrier that restricts public access to the waterfront at NBSD. The proposed action would not impose new restrictions on the public's right of access to the sea in the coastal zone, so it would not adversely affect coastal resources. Expanding the ESQD arc would not expand the "standoff" distance (bayward extent) from the new pier or extend beyond NBSD boundaries. So the arc expansion would not impact recreational uses of San Diego Bay or public access to areas outside of the existing security barrier. Therefore, there would be no impact.	Under the No-Action alternative, the existing access restrictions in the project area would remain in place; therefore, no effects would occur.
Safety and Environmental Health	The proposed action would not result in significant impacts to the public health or safety, including health and safety risks to children, because the project is located at NBSD, which has restricted public access, and a number of protective measures would be implemented to minimize safety risks. Prior to demolition of the existing pier, asbestos and lead based paint abatement would be performed by a licensed contractor. Activities in IR Site 1 would be governed by a site-specific health and safety plan and performed under the supervision of a certified industrial hygienist. Dredging contractor personnel would be trained in explosives safety procedures by the Navy's Explosive Ordnance Disposal units to minimize the potential risks associated with encountering unexploded ordnance in dredged sediments, and dredging operations would be conducted in accordance with the explosives safety plan. The Navy would use and enforce the U.S. Army Corps of Engineers Safety Manual (EM-55) for all construction activities. Facilities operations would be conducted in accordance with the Navy's Hazardous Materials Control and Management Program and Hazardous Waste Minimization Program.	Under the No-Action Alternative, the existing Pier 12 structure would continue to degrade and would expose military personnel to unsafe working conditions. There would be no change in existing impacts to the safety of the public or to environmental health.

Table ES-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
Utilities	The proposed action would not result in significant impacts to utilities because the project would not generate demands for water or electricity, or generate volumes of runoff, sewage, or solid wastes that would exceed the capacities of existing utilities. The Navy would recycle or reuse demolition debris to meet the current minimum diversion rate of 52 percent and assist the city of San Diego extend the life of landfills. The proposed action would result in upgraded utility infrastructure, such as the stormwater system and electrical generating capacity, on the replacement Pier 12, which would be a beneficial impact.	Under the No-Action Alternative, there would be no change in existing utilities and, therefore, no impacts. However, beneficial impacts from improved utilities on Pier 12 also would not occur.

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TABLE OF CONTENTS

List of Tables

List of Figures

Appendices

Electronic Files (CD in pouch of inside report cover)

File 1 EA File (Pier 12 Final EA.pdf)

File 2 EA Appendices A-H (Pier 12 Final EA_Appendices.pdf)

File 3 Appendices to Sediment Testing Report, Appendix H (Pier 12 Testing Rpt_Appendices.pdf)

Acronyms

BMP	best management practice
BO	Biological Opinion
BOWTS	Bilge and Oily Wastewater Treatment System
C	Celsius
CATEX	Categorical Exclusion
CCD	Coastal Consistency Determination
CCND	Coastal Consistency Negative Determination
CDF	confined drying facility
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH_4	methane
cm	centimeter
cm/sec	centimeter/second
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CSC	CDFG species of special concern
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
cy	cubic yards
dB	decibel
dBA	A-weighted decibel
DEH	Department of Environmental Health
DoD	United States Department of Defense
DoN	United States Department of the Navy
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
F	Fahrenheit
FEAD	Facility Engineering and Acquisition Division
FEMA	Federal Emergency Management Agency

FES	fish enhancement structures
FMP	fishery management plan
FONSI	Finding of No Significant Impact
FSC	Federal species of special concern
ft	feet
GHG	greenhouse gas
GST	green sea turtle
GWP	global warming potential
g/m^2	grams per square meter
HAPC	habitat areas of particular concern
hp	horse power
Hz	hertz
I-	Interstate
INRMP	Integrated Natural Resources Management Plan
IR	installation restoration
kg	kilogram
kHz	kilohertz
km	kilometer
kV	Kilovolt
L_{dn}	Day-Night Average Level
L_{eq}	equivalent sound level
L_{eq24}	equivalent sound level for a 24 hour period
LEED	Leadership in Energy and Environmental Design
LOS	level of service
m	meter
m^3	cubic meters
mg/L	milligrams per liter
MILCON	Military Construction
MLLW	Mean Lower Low Water
MMPA	Marine Mammal Protection Act
MOU	memorandum of understanding
MPRSA	Marine Pollution, Research, and Sanctuary Act
NAB	Naval Amphibious Base
NASNI	Naval Air Station North Island
NAVFAC	Naval Facilities Engineering Command
NBSD	Naval Base San Diego
NEPA	National Environmental Policy Act
NFESC	Naval Facilities Engineering Service Center
NHPA	National Historic Preservation Act

nm	nautical mile
NMFS	National Marine Fisheries Service
NOA	notice of availability
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxides
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRaD	Naval Command Control and Ocean Surveillance Center
NRC	National Research Council
NRHP	National Register of Historic Places
NRSW	Navy Region Southwest
O_3	Ozone
OPNAVINST	Chief of Naval Operations Instruction
PCB	polychlorinated biphenyl
PFMC	Pacific Fishery Management Council
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
ppt	parts per thousand
RMS	root mean square
RWQCB	Regional Water Quality Control Board
SAIC	Science Applications International Corporation
SANDAG	San Diego Association of Governments
SARA	Superfund Amendment and Reauthorization Act
SCADA	Supervisory Control And Data Acquisition
SDAB	San Diego Air Basin
SDCAPCD	San Diego County Air Pollution Control District
SDG&E	San Diego Gas & Electric
SDUPD	San Diego Unified Port District
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SOP	standard operating procedures
SO_x	sulfur oxides
SO_2	sulfur dioxide
SPAWAR	Space and Naval Warfare Systems Command
SPL	sound pressure level
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan

TCLP	Toxicity Characteristic Leaching Procedure
TMDL	total maximum daily loads
U.S.	United States
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
V	volt
v/c	volume to capacity ratio
VOC	volatile organic compound
VRG	Vantuna Research Group
WebSAR	web-based approval process
µg/kg	micrograms per kilogram
µg/m^3	micrograms per cubic meter
µPA	micro Pascals

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared by the Department of the Navy (Navy) in accordance with the National Environmental Policy Act (NEPA) of 1969 to assist United States (U.S.) Navy officials make a decision about whether or not to construct and operate a project (P-327) at Naval Base San Diego (NBSD), California. The proposed action would involve demolition of an inadequate existing pier (Pier 12), dredging in berthing and approach areas for a new pier, dredged material disposal at an approved ocean disposal site and upland disposal site (landfill), construction of a new general purpose berthing pier, installation and operation of associated pier utilities, including upgrades to the electrical utilities at the adjacent Pier 13, and re-use of concrete demolition debris to create fish enhancement structures (artificial reefs) (DoN 2010a).

NBSD is part of Navy Region Southwest (NRSW), the Naval shore installation management headquarters for the Southwest region (California, Arizona, Nevada, Utah, New Mexico, and Colorado). NRSW provides coordination of base support functions for operating forces throughout the region. This includes providing expertise in areas such as housing, environmental, security, family services, port services, air services, bachelor quarters, supply, medical, and logistical concerns for the hundreds of thousands of active duty, reserve, and retired military members in the area. NBSD is a major port for U.S. Navy ships assigned to the Pacific Fleet and is the major West Coast logistics base for surface forces of the Navy, dependent activities, and other commands (Figure 1.1-1). NBSD has 13 piers including Pier 12, the proposed project location, with over 50 berths for destroyers, cruisers, and support ships (Figure 1.1-2) (DoN 2006a).

Decision to be Made

The decision to be made as a result of the analysis in this EA is firstly to decide if an Environmental Impact Statement (EIS) needs to be prepared. An EIS would need to be prepared if it is anticipated that the proposed action would have significant impacts on the human or natural environment. Should an EIS not be deemed necessary, an alternative action from this EA would be selected for implementation. The selection of this alternative would be documented in a Finding of No Significant Impact (FONSI).

1.2 PURPOSE AND NEED OF THE PROPOSED ACTION

Adequate ship berthing facilities are required to support the mix of current and future Pacific Fleet ships homeported at NBSD. The purpose of the proposed action is to address the current and impending shortfall at NBSD of pier infrastructure necessary to support modern Navy ship classes with deep draft-power intensive or power intensive requirements. The berthing requirements from the Naval Base San Diego Homeport Loading Plan is to berth 18 deep draft-power intensive and 6 power intensive ships, based on a 67 percent loading factor (i.e., 67 percent of the homeported ships will be in-port at the same time). NBSD currently has 17 deep draft berths that are available and in adequate condition and 3 power intensive berths that are

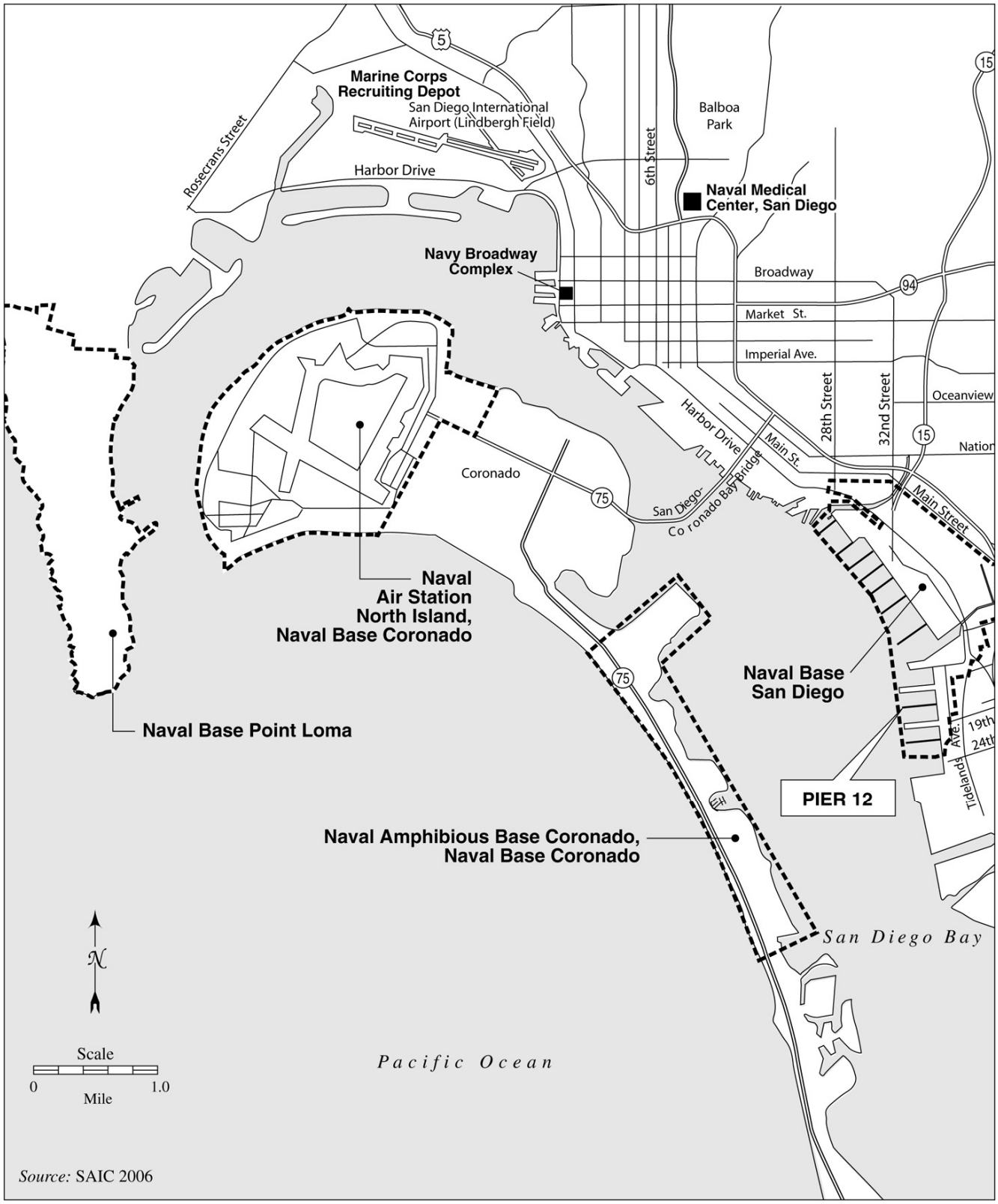

Figure 1.1-1. Regional Location of Naval Base San Diego.

Figure 1.1-2. Location of Pier 12 at Naval Base San Diego.

available and in adequate condition. Thus, there is deficit of 1 adequate deep draft-power intensive berth and 3 adequate power intensive berths (4 berths total deficit) (DoN 2004a).

The proposed action is needed because the existing berthing facilities at NBSD are insufficient and Pier 12 is inadequate to support the Navy's berthing needs due to the following factors:

- Inadequate deck size (30 feet [ft] / 9.1 meters [m] versus a proposed 117 ft [35.7 m] width, and 1,458 ft [444.4 m] versus a proposed 1,500 ft [457.2 m] length) and load capabilities to support modern ships and support facilities such as cranes (an adequate pier requires 90 to 120 ft (27 to 37 m) of width to provide maneuvering room for 90-ton [82-metric ton] truck cranes and other heavy vehicles);
- Insufficient water depth (-20 to -30 ft [-6 to -9.2 m] Mean Lower Low Water [MLLW] versus minimum of -37 ft [-11.3 m] MLLW) to support modern deep draft vessels;
- Structural deterioration of the pier, such as cracked and broken deck areas and piles; and
- Inadequate utilities, including power requirements and no oily waste system due to the narrow pier width and load restrictions.

Pier 12 was constructed in 1949, and was originally intended to harbor the Navy's "Moth Ball Fleet". The pier is not compliant with current structural or seismic criteria, and the current situation creates unsafe working conditions for personnel (DoN 2010a). Per NFESC Report CR-6220-OCN, most or all future activity on Pier 12 will be restricted due to its deteriorated condition. As such, it is not suitable for berthing and servicing the ships of today's fleet. Based on the continuing need for four berths to support modern and future classes of ships in San Diego Bay, failure to construct a replacement pier would not allow the Navy to properly support berthing of current homeported ships or future ships classes, and, consequently, current missions at NBSD would be curtailed (DoN 2004a). Further, the electrical utility upgrade at Pier 13 is needed to support LHA-6 class ships that are scheduled to be homeported at NBSD in 2013 (DoN 2010a).

1.3 LOCATION

NBSD is located on the east side of San Diego Bay as shown on Figure 1.1-1. The proposed Pier 12 project area is located in the southern portion of the NBSD pier complex, south of Pier 10 and north of Pier 13 (Figures 1.1-1 and 1.1-2). Existing Pier 12 extends 1,458 ft (444.4 m) into San Diego Bay, approximately 100 ft (30 m) south of the location of the proposed new pier. The landside of the pier complex is at the intersection of Womble Street and 12th Street. The locations of the existing and new Pier 12 are shown in Figure 1.3-1. The locations of the proposed construction laydown areas and a confined drying facility (CDF) are at the mole pier adjacent to the Paleta Creek Channel, at the intersection of Mole Road and Womble Street (Figure 1.3-2).

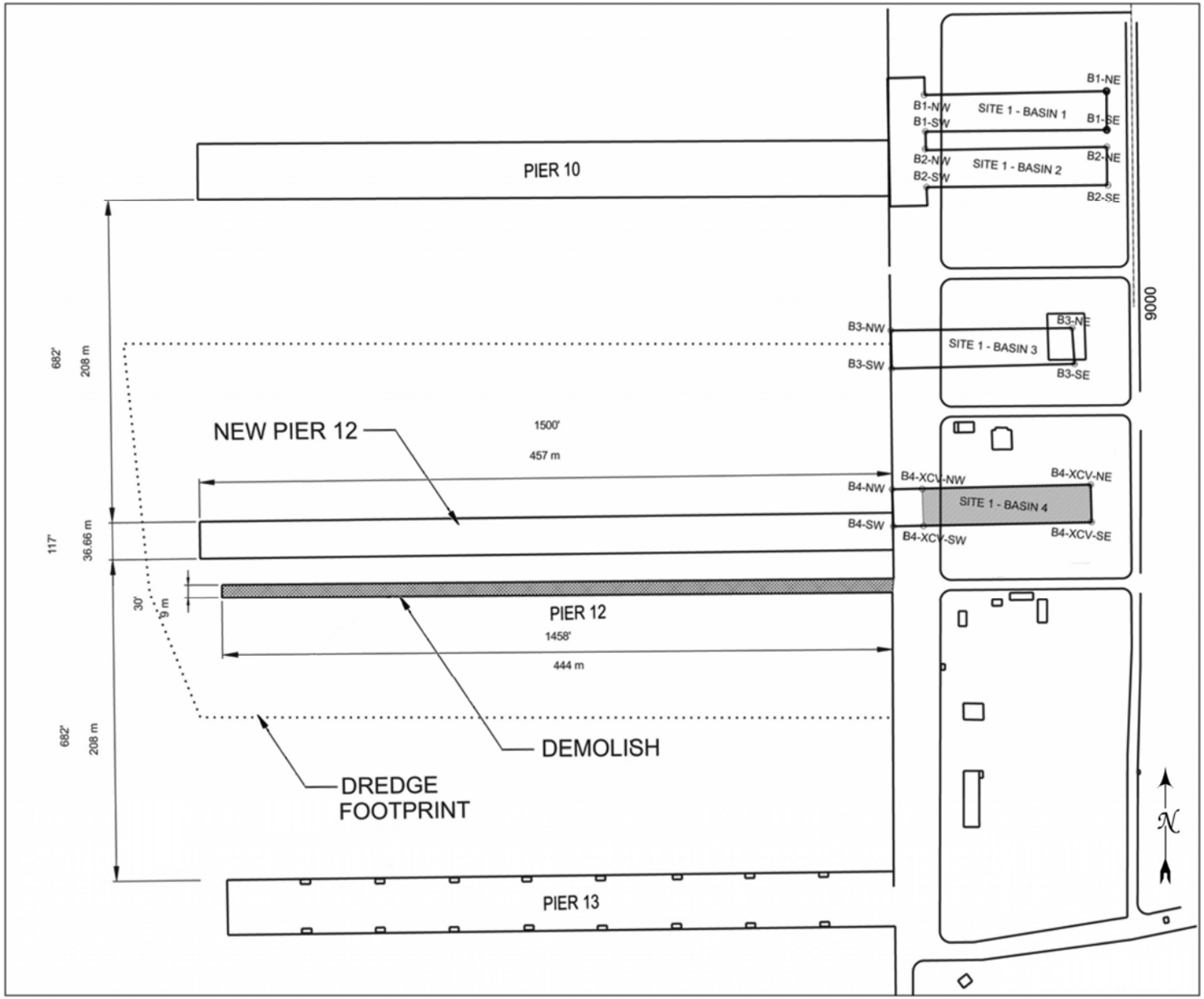

Figure 1.3-1. Site Plan for New Pier 12

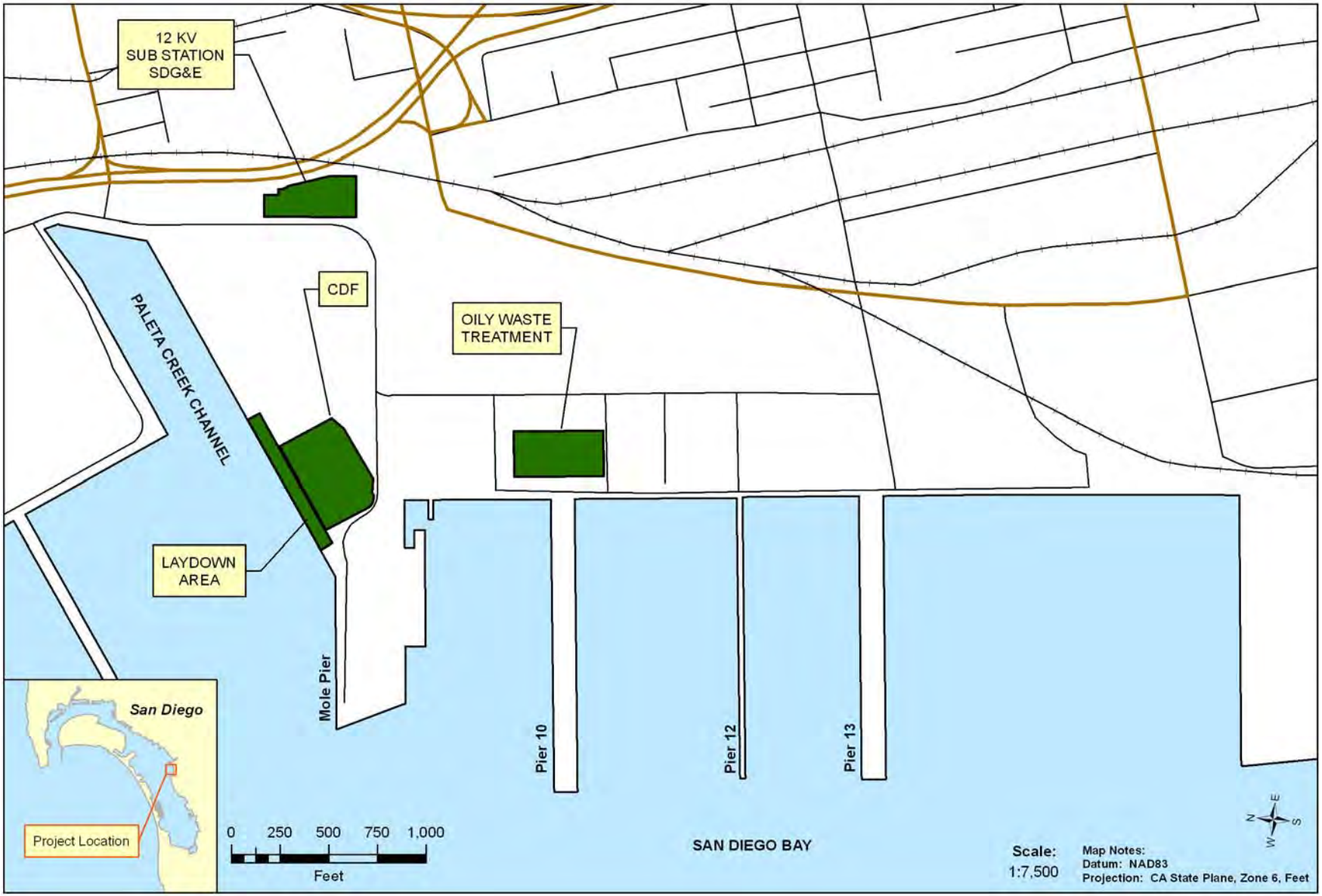

Figure 1.3-2. Locations of the Laydown Area and CDF Site at the Pier 12 Project Area.

1.4 SUMMARY OF PROPOSED ACTION

The proposed action would demolish Pier 12 at NBSD and construct a single-deck general purpose berthing pier and associated facilities that meet requirements for modern ship classes in the Pacific Fleet with deep draft-power intensive or power intensive requirements. The proposed action also would add a 4,160 volt transformer on Pier 13. Compared to the existing Pier 12, the footprint of the new pier would represent an increase in area of about 3.0 acres, based on an increase in width of 87 ft (26.5 m), and an increase in length of 42 ft (12.8 m), as summarized above and in Chapter 2. The duration of the project construction phase is expected to be 24 months.

Demolition of the existing pier would generate several types of debris, including concrete, wood such as creosote-treated pilings, steel, and asphalt. All debris except for concrete would be recycled or disposed of at a landfill, consistent with policies and procedures under the Navy's Waste Management Plan, San Diego Metro (DoN 2007a).

The concrete debris from Pier 12 would be used to create two fish enhancement structures (FES; artificial reef habitats), as further detailed in Chapter 2. The FES locations are shown in Figure 2.1-1.

Dredging to a depth of -37 ft (-11.3 m) MLLW in berthing and approach areas for the proposed, new Pier 12 would generate an estimated 479,125 cubic yards (cy [366,317 cubic meters]) of dredged sediments. Based on sediment testing conducted in 2010 by the Navy, and in accordance with protocols of the U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE), and agency concurrence with test results (see Section 3.4), up to 433,965 cy of the dredged material would be suitable for disposal at a designated ocean disposal site. The remaining materials, ranging in volume from 45,160 to 63,805 cy, and consisting primarily of surface layer sediments from areas immediately adjacent to the existing pier, are unsuitable for ocean disposal and would require upland disposal at a permitted landfill. The possible range in volumes for the upland disposal materials is based on the need to include some side slope and overdredge materials; however, the Navy would minimize the magnitude of this overage to the extent possible. Materials suitable for ocean disposal would be disposed of at the designated LA-5 ocean dredged material disposal site, located offshore from Point Loma. Dredged materials unsuitable for ocean disposal would be dried in the CDF and then transported for disposal at the permitted Otay Landfill in Chula Vista, California.

The new Pier 12 would be constructed as a single deck berthing pier at a location approximately 100 ft (30 m) north of the existing Pier 12. The new pier would be supported by approximately 700 concrete structural piles, with 200 concrete and 200 composite fender piles. Pier utilities, including potable water, sanitary sewage, oily waste, and a stormwater collection system with an oil/water separator, would be installed on the new pier. The Pier 12 electrical utilities would include four 480 volt, skid-mounted substations, industrial power substations and four switches, and two 4,160 volt skid-mounted transformers. The Pier 13 electrical utility upgrade would consist of one 4,160 volt skid type transformer with associated equipment, cabling, and concrete equipment slab. The supporting facilities would include upgrades to the existing feeder line between the South Cummings substation and switch station to Piers 12 and 13 (DoN 2010a).

Pier construction would require shoreside excavation for the pier base, as well as trenching for installation of utilities, within a portion of Installation Restoration (IR) Site 1 (Former Ship Repair Basins), Basin 4. A set of monitoring tools, described in Chapter 2, would be used to insure early detection of any impact or damage to the quaywall from dredging or pile driving actions so that any release of contaminants would be detected and response actions could be evaluated and implemented (DoN 2009). The existing Explosive Safety Quantity Distance (ESQD) arc that surrounds Pier 12 would be expanded. The new ESQD arc would have the same radius as the existing arc (1,250 feet as measured from the outer corners of the pier and a point 1,250 feet in from the shoreline). The only difference in the ESQD arc would be caused by the increased width of the new pier from 30 to 117 feet, which would not extend laterally beyond NBSD boundaries.

The project site has the bilge and oily waste treatment system (BOWTS) pipeline attached along the quaywall. The BOWTS pipeline carries bilge and oily waste and is Conditionally Authorized for Tiered Permitting and regulated by the Department of Environmental Health (as a hazardous waste tank system). Requirements prior to modification of the system or ancillary equipment if the modification is not identical or functionally equivalent is a notification to Department of Environmental Health under CCR Title 22, 66265.192 (m). Before pier demolition would begin, the Navy would notify the Department of Environmental Health that the piping on the adjacent quaywall would be modified for pier demolition and either reinstalled or new piping would be replaced when the new pier is completed. In addition, an independent, professional engineer would certify the work, meeting the requirements of Title 22, 66265.192 including the assessment outlined in section (k), prior to ships using the BOWTS system installed on the new pier. There are multiple regulations for independent, third party engineering certification requirements. One is for the initial construction, which captures the "design". Another is captured under a "major repair". The third certification is a periodic "recurring", in which there has been no change to the equipment. As long as the equipment being modified is "functionally equivalent", there may not be a need to certify the design again. The regulations only authorize a maximum period of five years for a third party certification, however, a professional engineer may find it necessary to certify for a shorter period of time. A copy of the certification would be provided to the NBSD Environmental Office and to the Department of Environmental Health.

1.5 ENVIRONMENTAL ISSUES OF THE PROPOSED ACTION

Environmental resources and factors potentially affected by the proposed action and evaluated in this EA include: topography, geology/soils, and seismicity; water resources; air quality; marine sediments, bathymetry, and water quality; marine and terrestrial biological resources; land use; socioeconomics; transportation and circulation; noise; aesthetics and visual resources; cultural resources; public access; safety and environmental health; and utilities. Primary issues are potential effects to water quality, air quality, traffic, and marine biological resources during demolition and construction phases. Table 1-1 identifies anticipated project action activities that may affect each resource area discussed in this EA.

Table 1-1. Project Actions Affecting Resource Areas.

Resource	*Related Proposed Action Activity*
Topography, Geology/Soils, and Seismicity	Pier demolition, construction, and operation.
Water Resources	Fuel spills, erosion, and stormwater runoff during construction; design and construction of the new pier regarding stormwater retention and treatment.
Air Quality	Air emissions from construction and dredging equipment and project related vehicles.
Marine Sediments, Bathymetry, and Water Quality	Dredging and other in-water construction activities.
Marine Biological Resources	Dredging and other in-water construction activities, including underwater noise from pile driving, and creation of FES that would cause adverse effects to Essential Fish Habitat (EFH) (primarily loss of soft bottom habitat).
Terrestrial Biological Resources	Shoreside excavation for the pier base and construction noise.
Land Use	Construction of the new (larger) pier and its relationship to existing, applicable land use policies.
Socioeconomics	Construction activities.
Transportation and Circulation	Construction-related ground traffic, including dredged material and debris removal to landfills; vessel traffic for in-water construction, dredging, and ocean disposal activities.
Noise	Construction equipment, including pile driving.
Aesthetics and Visual Resources	Public views of construction activities and the new pier.
Cultural Resources	In-water and on-land ground disturbance; demolition of Pier 12.
Public Access	Construction of the new (larger) pier and the relationship of the new pier and associated security zone to the coastal zone and the public's right of access to the sea.
Safety and Environmental Health	Construction activities within an IR site and potential for contaminant releases to San Diego Bay.
Utilities	Utility infrastructure for the new pier; utility requirements/demands.

1.6 NEPA PROCESS INFORMATION

The NEPA process provides for the consideration of environmental issues in federal agency planning and decision-making. Depending on the type of project and potential impacts, federal actions can either be categorically excluded from further analysis or evaluated in an EA or EIS. An EA serves to provide sufficient documentation and analysis to support a decision to prepare a FONSI or a more detailed EIS. An EIS would be required if the Navy determined that the proposed action would have a significant impact on the environment.

This EA discusses reasonable alternatives; describes the existing environmental conditions in the vicinity of the proposed action; evaluates direct, indirect, and cumulative impacts that might result from the proposed action; and identifies measures to avoid or minimize potential adverse impacts. Important considerations for identification and analysis of alternatives included: avoidance or minimization of environmental impacts; location in a security-controlled setting in San Diego Bay; sufficient area to accommodate ship ESQD arcs; and pier design features that provide sufficient space for construction, dredge depths, and landside facilities to support Navy mission requirements for current and future ships with deep draft-power intensive or power intensive requirements. The EA supports the Navy's intention to satisfy its purpose and need for the project while endeavoring to avoid or minimize adverse environmental impacts and to assist Navy officials in making a decision on whether or not to construct and operate the project.

This EA was prepared by the Navy in accordance with NEPA of 1969, 42 United States Code (U.S.C.) 4321-4370d, as implemented by Council on Environmental Quality (CEQ) regulations, 40 Code of Federal Regulations (CFR) Parts 1500-1508, and the guidelines contained in Chief of Naval Operations Instruction (OPNAVINST) 5090.1.C (30 October 2007), which establishes procedures for implementing NEPA, and Chief of Naval Operations Supplemental Environmental Planning Policy (23 September 2004).

The proposed action would require the following permits, certifications, and/or determinations:

- Clean Water Act Section 404/Rivers and Harbors Act Section 10 permits from the USACE.
- Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB).
- Permit from the USACE for ocean disposal of dredged materials in accordance with Section 103 of the Marine Pollution, Research, and Sanctuary Act.
- Storm Water Pollution Prevention Plan (SWPPP) pursuant to the general permit for construction-related discharges as regulated by the RWQCB.
- Coastal Consistency Negative Determination (CCND) from the California Coastal Commission in accordance with the Coastal Zone Management Act.

Note that ocean disposal of dredged materials is only allowed when the USEPA and USACE determine that the proposed activity is environmentally acceptable according to the criteria at 40 CFR Part 227, and material proposed for disposal must conform to USEPA's permitting criteria for acceptable quality (40 CFR Parts 225 and 227), as determined from physical, chemical, and bioassay/bioaccumulation testing (USEPA and USACE 1991). The results from testing (DoN 2010b) that demonstrated approximately 90 percent of the dredged materials from the proposed action would be suitable for ocean disposal are discussed in Section 3.4 and Appendix H of this EA. The remaining dredged materials would require upland disposal at a permitted landfill in accordance with the acceptance procedures specified by the landfill operator. The proposed action also requires coordination with National Marine Fisheries Service on EFH and informal consultation with National Marine Fisheries Service and U.S. Fish and Wildlife Service on the California Least Tern and green sea turtle. EFH and biological species are addressed in Section 3.5.

1.7 ORGANIZATION OF THE DOCUMENT

This EA is organized as follows: Chapter 1 defines the purpose and need for the proposed action. Chapter 2 describes the alternatives for accomplishing the proposed action. Chapter 3 describes the affected environment and analyzes the environmental consequences of each alternative. Chapter 4 examines the cumulative impacts of the proposed action and other projects in the area. Chapter 5 addresses various other considerations required by NEPA. This is followed by chapters on the list of preparers and their qualifications, persons and agencies contacted, and references.

1.8 PUBLIC INVOLVEMENT

The Navy published a Notice of Availability (NOA) on 3 June 2011 in "La Prensa San Diego", a weekly newspaper of general circulation serving the community surrounding Naval Base San Diego. The NOA described the proposed action and project alternatives analyzed, and listed the EA's resource topics analyzed. The NOA also solicited public input on the EA, announced where the EA was available for public review (online at the Navy's website https://www.cnic.navy.mil/cnrsw/index.htm, and at the San Diego Central Library), and provided the dates of the public comment period (4 June 2011 through 14 June 2011).

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2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

A Military Construction (MILCON) project (P-327) is proposed for this action. This chapter describes the proposed action, evaluates potential reasonable alternatives, and summarizes the environmental consequences. Descriptions of the affected environment and environmental consequences of the proposed action are presented in Chapter 3 and address the pier demolition and construction activities for all environmental resources. Evaluations of the proposed FES focus on those resources that could be reasonably affected by this component of the project.

The following operational and environmental requirements were developed to identify reasonable project alternatives:

- Provide sufficient water depth (-37 ft MLLW) in a security zone as defined in 33 CFR 165.1104;
- Provide adequate space to accommodate ship ESQD arcs (defined as a semi-circular area with a radius of 1,250 ft [381 m] from the end of the pier) within a Navy-controlled area;
- Provide berthing and operational space for four modern Navy ships;
- Provide a berthing layout that complies with Navy specifications (MIL-HDBK 1025/1 Piers and Wharfs [para 2.2.3.3]) and can accommodate a 135 metric ton crane and a fire lane, as well as an oily waste recovery system and stormwater collection system;
- Provide access to shore infrastructure such as power, sanitary sewage, and water;
- Avoid or minimize potential risks and effects to biological resources, such as EFH, eelgrass beds, and nesting areas of sensitive bird species; and
- Have no potential to conflict with existing or proposed land or water uses, including training, such that these uses would not be able to take place.

Based on a review of available sites, the Navy determined that the existing Pier 12 site at NBSD represents the only reasonable location for the proposed action. No other location in reasonable proximity to Pier 12 would provide the required space, water depths, security, and infrastructure without the additional and considerable expense associated with leasing or acquiring such property/ facilities. Moreover, using a location other than the site associated with the proposed action would amount to a duplication of present conditions, and thus would not be practical as an alternative. Further, a project that would renovate the existing substandard facility would not meet the project purpose and need. Under these circumstances, the proposed action described in Section 2.1 is the only action alternative evaluated in this EA.

As part of the Navy's decision-making process, five alternatives were considered but eliminated as infeasible when considering the purpose and need for the proposed action. These five alternatives are described in Section 2.3. The No Action Alternative is discussed in Section 2.2

2.1 PROPOSED ACTION

The proposed action would include the following activities: demolition of the existing pier, dredging and dredged material disposal, construction of the new pier and facilities, including

upgrades to the electrical infrastructure at the adjacent Pier 13, and re-use of demolition concrete to create FES (artificial reefs) (Figure 1.3-1). The scope of activities for the proposed action is described in Navy Form 1391 (DoN 2004a, 2010a). Because the Navy intends to perform the work on a design-build basis, final details on construction methods, equipment, and schedule of activities will not be known until a construction contractor has been selected. Simultaneous demolition of the existing pier, dredging, and construction of a new pier may not be feasible (A. Sanchez, personal communication 2007). The project construction phase is expected to start in November 2011 and be completed by November 2013 (DoN 2010a).

2.1.1 Pier Demolition and Fish Enhancement Structure Creation

Existing Pier 12, which is 30 ft (9.1 m) wide by 1,458 ft (444.4 m) long, would be demolished prior to dredging or construction of the new pier. Generally, the pier would be demolished from the outside in and from the top down. First, the fender piles and exterior appurtenances (such as utilities) would be demolished both above and below the pier deck. Salvageable piping and electrical materials would be loaded into dumpsters and transported to the NBSD recycling center or to a local recycler. Then, the deck would be demolished using sawcutting and jack hammering. Subsequently, structural piles would be extracted with cranes, possibly using jetting. Throughout the demolition, barge-mounted cranes would be used as well as scows for the collection and removal of demolition debris. A diesel-powered barge, barge and wharf cranes, tug boat, mobile construction equipment, and transport trucks would be used during an approximate 7-month period to remove all pier deck material and pilings. Prior to demolition, abatement of any existing lead paint and asbestos would be performed by a licensed abatement contractor. The construction contractor would use the Navy's manifesting procedures for hazardous wastes.

The Navy would require the contractor to prepare and implement a comprehensive debris management plan that addresses the types of debris expected, separation and retrieval methods, and disposal methods. Accidental releases of demolition debris to San Diego Bay would be prevented by placing booms around the site. The project would utilize catch devices and sheeting to capture and contain debris and materials that may be generated by the project. Debris generated from work on the barge would also be captured on-board work barges. All captured material would be swept and disposed of in accordance with the debris management plan. A silt curtain would be used at the project site during in-water construction in areas where there is a potential for turbidity.

Several types of debris would result from pier demolition, including concrete, wood, steel, and asphalt (DoN 2004a).

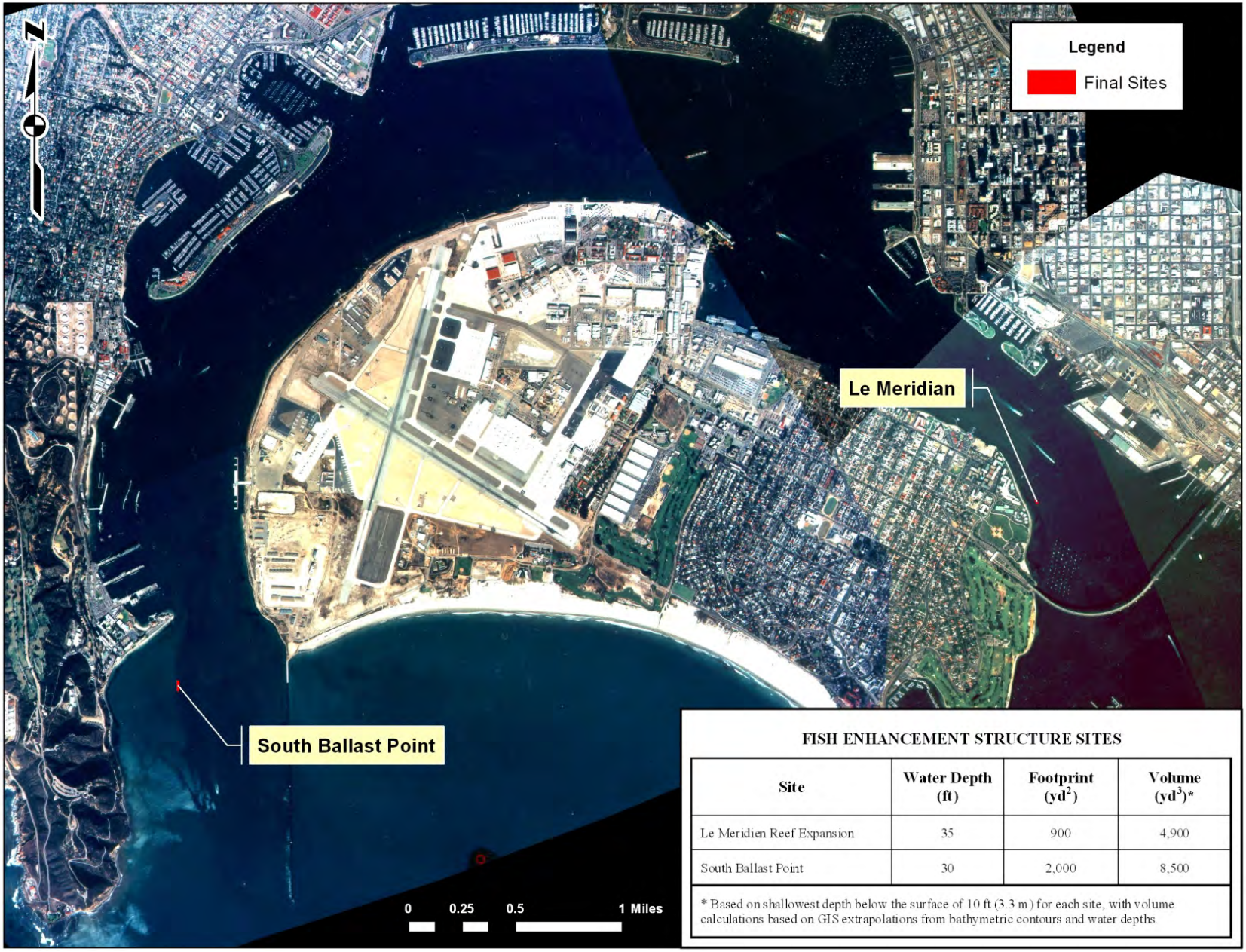
- Concrete debris would comprise the largest volume of demolition material, including approximately 92,000 cubic feet (3,400 cy) of concrete from the existing pier deck. This concrete cannot be reused in the new pier because it is over 50 years old and contains deteriorated reinforcing steel. The concrete debris, representing approximately 15,000 tons (about 13,000 cy) of material, would be used to create FES (artificial reefs), as described below and in Appendix A.
- Wood debris, comprising approximately 200, 13-inch diameter creosote-treated wood piles, stubs, chocks, and walers would be disposed of at an upland landfill, such as the Miramar Landfill, that is permitted to receive this material.

- Steel debris, including approximately 720 tons of steel ties, steel reinforcing, and wiring (e.g., utility wires), would be recycled or disposed of appropriately. If recycled, steel debris would be sent to the NBSD recycling center or recycled offsite, such as at the Miramar Landfill.
- Asphalt debris would comprise a minor amount (50 cy) of the material generated from demolition at the base of the pier where it abuts the adjacent roadway. The asphalt would be trucked offsite to an asphalt recycler if the quantity is sufficient for recycling in a cost effective manner. If not, it would be placed in a landfill, such as National City, Chula Vista, or Lakeside.

Recycling or reuse of demolition debris would follow Navy guidance on integrated solid waste management plans and qualified recycling programs provided in OPNAVINST 5091.1C (DoN 2007e). Additionally, the Navy has partnered with the city of San Diego to assist in extending the life of landfills and to meet solid waste reduction and diversion goals. The Navy has implemented policy and procedures in the Navy's Waste Management Plan, San Diego Metro Area (DoN 2007a) to maximize the diversion of materials entering the landfills, particularly construction and demolition debris. The Navy's current minimum diversion rate for construction debris is 52 percent.

The 109 concrete bent sections and 565 concrete structural piles generated from demolition of the deck would represent about 7,000 tons and 8,000 tons of debris, respectively. The combined approximately 15,000 tons of debris would equate to a volume of about 13,000 cy. This concrete cannot be reused in the new pier because it is over 50 years old and contains deteriorated reinforcing steel. However, the concrete debris can be considered as underwater habitat material as long as any rebar is not exposed more than 2 inches (about 5 cm). Therefore, the concrete debris from demolition of the existing Pier 12 would be used to create FES at two sites in San Diego Bay (Figure 2.1-1) that have been identified based on their location, bathymetry, and potential suitability to support artificial reefs (M. Perdue, personal communication 2007). One of the sites (South Ballast Point) is at the mouth of San Diego Bay, and the other site (Le Meridian) is adjacent to the A-4 anchorage off Coronado near an existing reef. Selection of these sites as FES was agreed to by National Marine Fisheries Service, California Department of Fish and Game, and the Port of San Diego.

The combined footprint of the two FES would be 0.6 acres (0.2 hectares). The volume capacities of the South Ballast Point and Le Meridian FES sites are 8,500 cy and 4,900 cy, respectively. Therefore, the two sites would have sufficient capacity to accommodate the approximately 13,000 cy of concrete debris. The worst case transport distance by tugboat controlled barge from Pier 12 would be about 10 miles to the South Ballast Point site. The concrete debris would be loaded onto a barge at Pier 12 using a pier-side crane outfitted with a clamshell bucket. At the FES sites, the concrete debris would be offloaded using a barge-mounted crane with a clamshell bucket, and placed on the bottom. Pre-, post, and three-year post construction monitoring would be conducted to validate environmental (recruitment) benefits from the FES (M. Perdue, personal communication 2007).



FISH ENHANCEMENT STRUCTURE SITES

Site	Water Depth (ft)	Footprint (yd^2)	Volume (yd^3)*
Le Meridien Reef Expansion	35	900	4,900
South Ballast Point	30	2,000	8,500

* Based on shallowest depth below the surface of 10 ft (3.3 m) for each site, with volume calculations based on GIS extrapolations from bathymetric contours and water depths.

Figure 2.1-1. Locations of the Fish Enhancement Structures (FES).

Pipelines that carry bilge and oily wastes from the NBSD piers are Conditionally Authorized for Tiered Permitting and regulated by the Department of Environmental Health as a hazardous waste tank system. The Navy would notify Department of Environmental Health before demolition of the existing pier was initiated. Notification (either an e-mail or letter) would state that the system would be modified when the oily waste line installed on the new Pier 12 is tied into the existing pipeline on the adjacent quaywall. In addition, an independent, professional engineer would certify the work, meeting the requirements of Title 22, 66265.192 including the assessment outlined in section (k), prior to ships using the BOWTS system installed on the new pier. There are multiple regulations for independent, third party engineering certification requirements. One is for the initial construction, which captures the "design". Another is captured under a "major repair". The third certification is a periodic "recurring", in which there has been no change to the equipment. As long as the equipment being modified is "functionally equivalent", there may not be a need to certify design again. The regulations only authorize a maximum period of five years for a third party certification, however, a professional engineer may find it necessary to certify for a shorter period of time. A copy of the certification would be provided to the NBSD Environmental Office and to the Department of Environmental Health.

2.1.2 Dredging and Dredged Material Disposal

Dredging to a depth of -37 ft (11.3 m) MLLW in berthing and approach areas for the proposed, new Pier 12 would be conducted to accommodate modern Navy ships such as deep draft-power intensive vessels. The total volume of sediment that would need to be dredged to meet project depths, with a two foot overdredge allowance, is 479,125 cy (366,317 cubic meters) based on estimates from Fugro Pelagos (dated 10 November 2010). Calculated volumes of dredged material are based on bathymetry and modern Navy ship requirements, and includes the following: a 350-ft (91-m) dredge width to the south of the replacement pier, 400-ft (122-m) dredge width to the north of the replacement pier, and an extension of approximately 250 ft (76 m) past the end of the pier for a total length of 1,750 ft (533 m).

In 2010, the Navy conducted testing of the sediments proposed for dredging according to protocols in the USEPA and USACE Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual (known as the Green Book) (EPA-503/8-91/001). Results of the sediment testing (DoN 2010b) are summarized in Section 3.4 (the sediment testing report is provided in Appendix H). Based on a review of the testing results, the Navy proposed to USEPA and USACE that up to 433,965 cy of dredged material would be suitable for disposal at a designated ocean disposal site, such as the LA-5 site located at 600 ft (183 m) depths off Point Loma (see Chapter 3 for further details). The remaining materials, ranging in volume from 45,160 to 63,805 cy, and consisting primarily of surface layer sediments from areas immediately adjacent to the existing pier, are unsuitable for ocean disposal and require upland disposal at a permitted landfill. The possible range in volumes for the upland disposal materials is based on the need to include some side slope and overdredge materials; however, the Navy would minimize the magnitude of this overage to the extent possible. The areas with sediments requiring upland disposal are shown in Figure 2.1-2. The agencies concurred with this proposal (email from USEPA dated 2 November 2010).

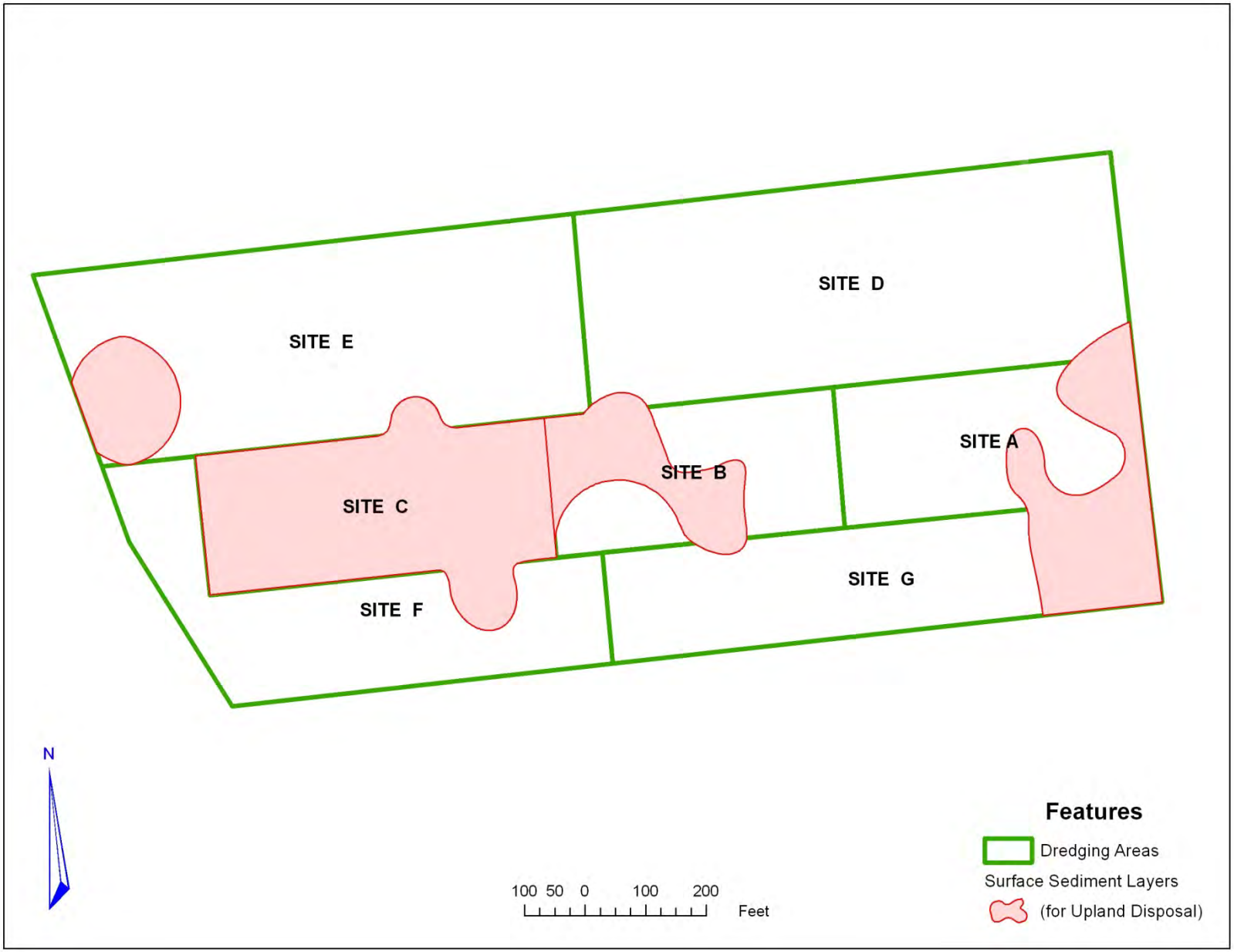


Figure 2.1-2. Pier 12 Dredging Footprint for Sediments Requiring Upland Disposal.

Beneficial reuse of the proposed dredged material was considered but eliminated as a viable option because the unconsolidated portion contains less than 80 percent sands and is too fine grained (30 to 50 percent silt plus clay) for use as beach nourishment (see Chapter 3). The Bay Point Formation component of the dredged material, although coarser grained, is generally too consolidated and is a small proportion (less than 10 percent) of the total volume.

Dredging would be performed using a mechanical (clamshell bucket) dredge. The dredging duration is expected to be 270 days. Sediments suitable for ocean disposal would be placed in barges that would be towed to the LA-5 disposal site, where the material would be released. The maximum daily dredging production rate is expected to be 1,600 cy, which includes a single tug towing tandem, 1,000 cy capacity barges that have been loaded with approximately 800 cy. The round trip from the dredging site to LA-5 is expected to take about 10 to 12 hours, and reloading each trip would take another 6 to 8 hours. Barges would be equipped with electronic tracking devices to document that material releases occurred within the disposal site boundaries, as specified in the dredging permit.

Sediments for upland disposal would be dredged using a bucket dredge and placed in a barge that would be towed to the offloading site at the existing mole pier north of Pier 12. The dredged material would be offloaded from the barge using a crane and bucket and placed in a lined, CDF adjacent to the offloading site (Figure 1.3-2). The material would be dried in the CDF until it met the dryness requirement of the landfill, at which point it would be loaded into 15 cy capacity trucks and transported to the Otay Landfill. It is estimated that the maximum daily volume of material that could be loaded from the CDF onto trucks and transported to the landfill is 1,629 cy, which represents 135 truck trips per day over 40 days. All dredged material disposal operations performed for the proposed project would comply with Clean Water Act Section 404 and be in accordance with a dredging permit issued by the USACE and a Clean Water Act Section 401 water quality certification from the San Diego RWQCB, as well as the acceptance procedures required by the landfill operators.

The CDF would be located in a paved portion of the mole pier adjacent to the Paleta Creek Channel, at the intersection of Mole Road and Womble Street (Figure 1.3-2). Prior to use, the site would be lined with an impermeable liner, and a dike/berm would be constructed around the site. The CDF would be 1.5 acres; however, only 1 acre would be used for drying sediments, and the remaining 0.5 acres would be used for handling and loading the sediments into transport trucks. Wet sediments would be placed into the CDF with a maximum thickness of 1 ft (0.3 m). Excess water from the wet sediments would be collected inside the CDF and disposed of to the sanitary sewer system. Water disposed of to the sanitary sewer system must meet sewer discharge limits set by the city of San Diego. Samples of CDF waters discharged to the sanitary sewer system would be monitored to ensure that that none of the water entering the sewer system during the time of construction exceeded limits set by the city of San Diego. Existing storm drains in or adjacent to the CDF would be covered, and no decant water would be allowed to drain out of the CDF or to a storm drain. Dried sediments would be transported by trucks to the Otay Landfill, which is a permitted (USEPA Facility Registration System ID 110000832243) Class III landfill located at 1700 Maxwell Road in Chula Vista, California, approximately 11.6 miles from NBSD. The Otay Landfill accepts residential, commercial, and non-hazardous wastes. The facility is owned and operated by Allied Waste Industries and is open from Monday through Friday from 7AM to 4PM and on Saturdays from 7AM to 3PM for

disposal of special waste. The permitted site area is 464 acres, and the permitted disposal area is 230 acres. The landfill has a permitted maximum disposal rate of 5,830 tons per day, and it does not have a daily truck count limit. Otay Landfill has the capacity to accept 1,500 to 2,000 tons per day of dried dredged sediments, and this volume could be larger if the material was usable as alternative daily cover (E. Legaspi, personal communication 2010). Regardless, this capacity is adequate for the maximum daily volume of 1,629 cy (or approximately 1,950 tons, assuming a density for dredged sediments of 1.2 tons per cy) required for this project. The landfill has capacity through 30 April 2021 (CalRecycle 2010). The landfill operates under RWQCB Order No. 93-86. The contractor or Facility Engineering and Acquisition Division would sign for any special waste or non-hazardous shipping papers, and results of chemical analyses of the wastes would be reviewed by Base Environmental prior to shipment.

2.1.3 New Pier and Facilities Construction

The new replacement pier would be constructed as a single-deck, concrete berthing pier that is 117 ft (35.7m) wide by a maximum length of 1,500 ft (457.3m) (DoN 2004a). A conceptual cross-section of the new pier is provided in Appendix A. Compared to existing Pier 12 as described above, this would represent an increase in area of about 3.0 acres, an increase in width of 87 ft (26.5 m), and an increase in length of 42 ft (12.8 m). This length would still ensure that the pier would not interfere with vessel navigation in San Diego Bay. The pier would provide two outer end pierside berths for modern Navy ships comparable in size to a multi-purpose amphibious assault ship, the largest ship that would be supported by the project. The inner berths would have enough room for two other modern Navy ships, such as guided missile destroyers.

The pier deck would be constructed of rebar-reinforced concrete. Deck support would be by pre-stressed concrete (structural) piles with cast-in-place concrete pile caps and a concrete deck structure. Deck installation would require a concrete truck and a pumper truck over a period of 180 days.

Structural piles (approximately 700 concrete) and fender piles (approximately 200 concrete and 200 composite) would likely be installed using a floating crane and diesel hammer. Jetting may also be used to install new piles. The use of concrete or composite pilings in lieu of creosote wood pilings is consistent with Navy policy and is preferred by the RWQCB because, unlike creosote pilings, they are not a potential source for polycyclic aromatic hydrocarbons to San Diego Bay. Pile installations would occur over a period of 120 days. The fender system for the pier would include foam-filled fenders at the berths and plastic log camels. Installation of the primary and secondary fender systems would take an estimated 120 days and 90 days, respectively (Appendix A).

Shoreside excavation for the pier base would be conducted over an approximate 20-day period using standard construction equipment, including an excavator and dump trucks. The excavation area would be approximately 50 ft by 50 ft (15.2 m by 15.2 m) and 10 ft (3 m) deep. An Installation Restoration (IR) site, referred to as Site 1 (Former Ship Repair Basin), abuts the landside end of proposed Pier 12. The Navy is managing the site under the Navy's Installation Restoration Program that provides for compliance under the procedural and substantive requirements of the Comprehensive Environmental Response, Compensation and Liability Act as amended by the Superfund Amendment and Reauthorization Act, including compliance with applicable or relevant and appropriate state laws. During construction of the new pier, the

Navy would require the construction contractor to develop and implement engineering controls and procedures that ensure the water tight integrity of the quaywall is maintained, and that hazardous materials contained by the quaywall are not released into San Diego Bay.

The Navy conducted a study to examine the potential for the proposed project to negatively impact the structural integrity of the quaywall that could result in releases of hazardous materials contained by IR Site 1 (DoN 2009). As a result of this study, a Structural Engineer has made a determination that dredging and construction of a new pier for the proposed project is not expected to have undesirable consequences to the quaywall or cause contaminant releases to San Diego Bay. The study report is included as Appendix D.

Although damage to the existing quaywall due to accidental impacts are unlikely, as a precautionary measure the Navy would implement a monitoring system to insure early detection of any impacts or damage to the quaywall from dredging or pile driving actions so that any release of contaminants to San Diego Bay is detected and response actions can be evaluated and implemented. The monitoring system would include inclinometers installed along the quaywall face to provide a record of any wall movement that could lead to contaminant transport from the basin into San Diego Bay. In addition, the Navy would use the SPAWAR Sensor Package to detect any groundwater discharge causing a change in seawater conditions next to the wall. Groundwater discharge, if present, would show up as a lower salinity, higher temperature, and possibly a lower pH than found in natural seawater. The Navy also would collect water grab samples from the discharge of groundwater through the quaywall near the tide line. Water samples would be collected during low tide periods when discharge is strongest, and analyzed for water quality and volatile organic compounds. It is expected that the groundwater would be warmer and fresher than the surface water, and that elevated volatile organic compound concentrations and low pH levels associated with the groundwater would act as chemical markers to distinguish the release of groundwater through the quaywall and indicate any pathway between the site and the Bay. If groundwater discharge is suspected, the Navy would perform additional measurements using the ultrasonic UltraSeep system to quantify discharge rates and contaminant fluxes to San Diego Bay.

Work within the basin would be performed under the oversight of a California Certified Industrial Hygienist. The Navy would further require a site-specific Health and Safety Plan be developed that addresses and mitigates contaminants known to be within IR Site 1. The Health and Safety Plan shall be signed by the Certified Industrial Hygienist and submitted for review to the Navy Environmental Health Center. The Health and Safety Plan would be implemented by the contractor during the field activities.

The Navy would adhere to the most stringent building code requirements found in the Uniform Facilities Code. The Uniform Facilities Code incorporates the International Building Code and the American Association of State of Highway Transportation Officials, which is a set of codes mostly relating to transportation requirements for bridges and similar projects.

Special construction features for the replacement pier would include installation of a stormwater collection system with an oil-water separator, and structural capacity for a 150 ton (136 metric ton) crane. Pier utilities would include potable water, sanitary sewer, oily waste, and compensating water systems. Additional ship-to-shore utilities would include electrical, telephone, cable television, fiber optic communications, Supervisory Control And Data

Acquisition system for energy monitoring and control, and fire alarms. The project would support a future upgrade of ship-to-shore power from 480 volts to 4,160 volts to meet future power intensive Fleet requirements (e.g., for DDG-1000 and LHA-6 ship classes that are planned for berthing at new Pier 12) by providing spare ducts-conduits. The project would include the addition of four 480 volt skid-mounted substations, two industrial power substations, and two 4,160 volt skid-mounted transformers at Pier 12. The Pier 13 electrical utility upgrade would consist of one 4,160 volt skid type transformer with associated equipment, cabling, and concrete equipment slab. Further, the existing South Cummings Substation feeder to Switch Station R (adjacent to Pier 12) would be upgraded from 800 amps to 2,000 amps to provide this type and amount of power to the new Pier 12. Anti-Terrorism/Force Protection measures would include a security gate and fencing, pedestrian turnstile, watch tower, guard house, and high mast lighting, consistent with current security requirements (DoN 2010a).

As part of the proposed action, the existing ESQD arc that surrounds Pier 12 would be extended laterally, but not bayward. The new ESQD arc would have the same radius as the existing arc (1,250 ft as measured from the outer corners of the pier and a point 1,250 ft in from the shoreline). The only difference in the ESQD arc would be caused by the increased width of the new pier from 30 to 117 ft. This would extend the arcs north and south over the other piers. There would be no change in shoreward or bayward (westward) directions. The ESQD arc would not extend onto the shore, and would not extend any farther out than the existing piers. Extending the ESQD arc would not change the pierhead bulk line, which corresponds to NBSD's ownership boundary.

2.1.4 New Pier Operations

No new ship homeporting actions are specifically planned as a part of the proposed project and no ship berthing operational details are presently known. However, the proposed project would allow the future-year berthing of newer, larger and more power intensive ships. As these newer, larger and more power intensive ships are homeported or berthed at Naval Base San Diego, NEPA analysis will be performed on a case by case basis. Therefore, ship operations are not addressed in this EA. This EA addresses potential impacts associated with pier demolition, dredging and dredged material disposal, new pier construction, and creation of FES.

2.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative the proposed action would not occur, meaning no pier replacement, dredging, or dredged material disposal. Because the existing pier was originally constructed to harbor the Navy's "Moth Ball Fleet", and is not suitable for berthing and servicing the ships of today's fleet, the No-Action Alternative would not allow NBSD to meet its mission of accommodating modern Navy ships, as described in Chapter 1. The existing pier would continue to degrade until all activity is restricted from occurring due to deteriorated and unsafe conditions.

The No-Action Alternative provides a measure of the baseline conditions against which potential impacts of the proposed action can be compared. In this EA, the No-Action

Alternative is represented by the baseline conditions described in Chapter 3, Affected Environment and Environmental Consequences.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED

As part of the Navy's decision-making process, various alternatives have been considered that could potentially accomplish the project purpose and need using approaches that are both similar and dissimilar to current approaches. These alternatives are discussed in DoN (2004a, 2010a). Considerations included onsite alternatives, such as a different design for the pier (double-deck instead of the proposed single-deck), renovation and modernization of the existing pier or other piers at NBSD, and offsite alternatives such as leasing a pier or alternative sites. These alternatives have been rejected due to engineering, logistical, or environmental constraints, as discussed in the following sections. Consequently, the proposed action and the No Action Alternative are the only alternatives evaluated in this EA.

2.3.1 Onsite Alternatives

2.3.1.1 Pier Design

A double-deck pier design was considered that would accommodate berthing requirements for four modern-sized ships, similar to the proposed action. It would be the same length as a single deck pier (1,500 ft [457.3m]), but would be narrower (93 ft [28.3 m] versus 117 ft [35.7m]) because the utilities are located on the lower deck. However, a double-deck design would not be as efficient for handling many of the classes of ships that require support at NBSD. For example, the tidal range in San Diego Bay would cause interferences between mooring lines and deck elevations relative to pier appurtenances, and deck elevations would not allow for the use of ramps (sideport ramps) for some classes of ships. The double deck pier would also be a more expensive facility with little additional benefit. Based on these considerations, a double-deck design is eliminated from further consideration in this EA because it would not fulfill screening criteria related to operations such as the need for ramps to support some classes of ships, as well as tidal range constraints.

2.3.1.2 Renovation-Modernization of the Existing Pier 12

Renovation and modernization of the existing, deteriorating pier was considered but eliminated from further consideration because operational and support needs for modern Navy ships would require similar demolition and replacement or construction activities as would be required for a new pier. For example, the existing pier would require widening to an appropriate size (e.g., 117 ft [35.7 m]); structural repairs (pier deck, underdeck, pile caps, and piles); addition of a new fendering system; installation of additional utilities to support ship services; and dredging to project depths (-37 ft [-11.3 m] MLLW). Therefore, because renovation and modernization essentially would be equivalent to construction of a new pier, but would be substantially less efficient to construct (function by function replacement of the existing pier) and likely less reliable than a new pier, this would not be a viable alternative to the proposed action as judged by comparison with screening criteria (DoN 2004a, 2010a).

2.3.1.3 Alternative Site at NBSD

Pier 14, which was located south of the proposed Pier 12 site at NBSD, has been demolished. Construction of a replacement Pier 12 at the site of Pier 14 would require an ESQD arc that extended 1,250 ft (381 m) beyond the pier. However, this ESQD arc would extend into the Knight and Carver Custom Yacht Parcel in San Diego Bay and the National City Marine Terminal waterfront and would result in potential conflicts with developed private property that is not under Navy control. The DoD Standard 6055.9-STD states that land encumbered by ESQD arcs must be owned by the U.S. Government (DoN 2006a). Therefore, the relocation alternative is eliminated from further analysis based on the potential conflicts associated with the ESQD requirement.

2.3.2 Offsite Alternatives

2.3.2.1 Leasing

Leasing instead of constructing a new pier is not feasible because there are no facilities available in the San Diego region to accommodate the berthing requirements of the Navy, including appropriate utility services, ESQD arc requirements, security, and operational considerations, as judged by comparison with screening criteria (DoN 2004a, 2010a).

2.3.2.2 Alternative Sites

Four NRSW Metro San Diego Installations that are offsite from NBSD were considered for the proposed replacement pier: (1) Naval Base Point Loma; (2) Naval Air Station North Island (NASNI); (3) Naval Amphibious Base (NAB) Coronado; and (4) Navy Broadway Complex (see Figure 1.1-1). The first three installations are eliminated from consideration because the berthing and operational space at these sites is already fully loaded with ships, submarines, or aircraft carriers. Further, based on existing ship-loading plans, these installations have no surplus area that would be suitable for constructing the type of pier necessary to fulfill support needs for berthing four modern Navy ships as required by the proposed action. Therefore, these sites are eliminated from further consideration.

The Navy Broadway Complex is located on only 5.9 acres of land, which would represent insufficient space for a replacement pier and adjacent wharf, warehouse, and maintenance areas. The Navy Broadway Complex also would have inadequate truck access to the pier area from the public street that passes within a few feet of the piers. The Navy Broadway Complex may be subject to commercial redevelopment in future years and therefore may not be available. Therefore, this site is eliminated from further consideration.

Application of the screening criteria resulted in elimination of all reasonable alternative pier sites to the existing Pier 12 location, including the historical location of Pier 14 at NBSD, leasing offsite space, and offsite locations at other NRSW Metro San Diego Installations.

Alternatives related to a different design for the pier, renovation and modernization of the existing pier, leasing a pier, and onsite and offsite alternative sites for a new pier have been considered but are not evaluated further in this EA due to the fact that they do not meet the operational, safety, engineering, and timeline constraints for the project.

2.4 SUMMARY OF IMPACTS

This EA has determined that implementation of the proposed action would not result in significant impacts to any resource area. Similarly, implementation of the No-Action Alternative also would not result in significant impacts, except for increased susceptibility of the existing Pier 12 to further deterioration and exposures of personnel to unsafe working conditions. The environmental consequences associated with implementation of the proposed action and No-Action Alternative are presented and compared in Table 2.4-1. For a detailed description and analysis, refer to Chapter 3, Affected Environment and Environmental Consequences, and Chapter 4, Cumulative Impacts. These analyses consider adequate protection of human health and the environment.

Table 2.4-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
Topography, Geology/Soils, and Seismicity	The proposed action would not result in significant impacts to geological resources because no resources exist at the project site or disposal sites that would be affected by the proposed action. The project would not create a risk to structures or personnel because the design and construction of the replacement pier would adhere to the most stringent building code requirements in the Uniform Facilities Code.	The No-Action Alternative would not alter existing facilities. The existing Pier 12 structure would continue to degrade and would expose personnel to unsafe working conditions.
Water Resources	The proposed action would not significantly impact surface water or groundwater because standard erosion and pollution control measures would be implemented. Control measures to protect water resources would include: implement a construction stormwater pollution prevention plan and best management practices; prepare and implement a debris management plan and spill prevention, control, and countermeasures plan; monitor the quality of decant waters discharged from the confined drying facility to the sanitary sewer; and incorporate a stormwater collection system into the design of the replacement pier. The proposed action would require construction activities (e.g., excavation and/or trenching) within the IR Site 1, Basin 4. However, the construction contractor would be required to incorporate engineering controls and procedures that would ensure that the integrity of the quaywall would be maintained and contaminant releases to the Bay would be prevented. The Navy would install a monitoring system to insure early detection of any impacts or damage to the quaywall from dredging or pile driving actions and detection of any release of contaminants to San Diego Bay so that response actions could be evaluated and implemented.	The No-Action Alternative would not generate wastes or otherwise disturb water resources. Significant impacts would not occur. However, beneficial impacts from an improved stormwater filtration system associated with the proposed action also would not occur.

Table 2.4-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
Air Quality	Estimated emissions as a result of the proposed action would be below *de minimis* levels; therefore, a conformity analysis would not be necessary. The proposed action would not result in significant impacts on air quality.	The No-Action Alternative would not result in any activities or air quality impacts that differ from existing conditions. No impacts would occur.
Marine Sediments, Bathymetry, and Water Quality	The proposed action would not cause significant impacts to marine water or sediment quality because protective measures would be implemented during demolition and construction activities to limit dispersion of resuspended sediments, debris, and other construction materials and to prevent exceedences of dredging permit conditions. Protective measures would include the following: asbestos and lead-based paint abatement would be conducted by a licensed contractor prior to pier demolition; a debris management plan would be prepared and implemented during in-water construction; debris created by construction activities would be quickly contained and disposed of, and floating booms would be used to prevent dispersion of materials beyond the project site; a spill prevention, control, and countermeasures plan would be prepared and implemented; stormwater runoff during construction would be regulated by a construction stormwater pollution prevention plan and best management practices; a silt curtain would be used at the project site during in-water construction in areas where there is a potential for turbidity; and water quality monitoring would be conducted in accordance with a dredging permit and monitoring and reporting plan; the construction contractor would incorporate engineering controls and procedures that would ensure that the integrity of the quaywall is maintained and contaminant releases to the Bay from IR Site 1 would be prevented; and the Navy would install a monitoring system to ensure early detection of damage to the quaywall or contaminant releases to San Diego Bay so that response actions could be evaluated and implemented. Therefore, no significant impacts to marine sediment and water quality and bathymetry would occur.	The No-Action Alternative would not generate wastes or otherwise significantly disturb marine water and sediment quality. Significant impacts would not occur.

Table 2.4-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
Marine Biological Resources	The proposed action would require dredging that would remove bottom sediments and thereby disturb the benthic habitat within the dredging footprint. Results from sediment testing indicate that exposures to suspended sediments during demolition and dredging activities would not cause significant toxicity to marine organisms. Also, a debris management plan and spill prevention, control, and countermeasures plan would be prepared and implemented during demolition and construction activities, and a silt curtain would be used at the project site during in-water construction in areas where there is a potential for turbidity to prevent water quality impacts with the potential for affecting marine organisms. The project also would create noise and other activities that would discourage site use by fish, birds, turtles, and mammals during pier demolition and construction activities. However, these species are mobile and would be able to avoid the site, and then return once the replacement pier is completed. The Navy would conduct a survey for *Caulerpa* at both the pier replacement and FES sites prior to initiation of in-water construction work. For the threatened and endangered species in the general project region, the Navy has determined that the proposed action may affect, is not likely to adversely affect the California least terns or Eastern Pacific green sea turtles due to implementation of the avoidance and minimization measures contained in the Navy's "California Least Tern Memorandum of Understanding (MOU)" and it's "Green Sea Turtle Informal Consultation"with the U.S. Fish and Wildlife Service. The pier replacement and fish enhancement structure sites are not within known nesting or high foraging habitat for the least tern, as defined in the MOU. The Navy would review the construction schedule prior to the start and during each phase of the project, and every effort would be made to compress or adjust the schedule to avoid or minimize intrusion into the least tern breeding season. Also, a silt curtain would used at the project site during in-water construction in areas where there is a potential for turbidity to minimize the potential for effects from increased turbidity of surface waters generated by in-water construction activities. Although no green sea turtles have been observed in the vicinity of the replacement pier, they have the potential to move through the project area. In-water noise levels associated with the proposed action are not expected to exceed Level A thresholds. Prior to the commencement of in-water construction activities, the waters in the immediate area would be scanned visually for the presence	The No-Action Alternative would not alter the project site or result in any activities or operations that would alter or affect marine habitats or wildlife, or impact sensitive species. No impacts on marine biological resources would occur. However, beneficial impacts from the creation of FES associated with the proposed action also would not occur.

Table 2.4-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	of turtles and marine mammals. If these species are observed, construction would be postponed until the animals have left the area. The construction contractor also would be required to use a ramp-up procedure for pile driving to allow any undetected animals in the area to voluntarily depart. Potential adverse effects to EFH at the Pier 12 site would consist of a series of short, independent disturbances associated with non-continuous construction actions. The two EFH species that may occur in the area are highly mobile and capable of avoiding the project area during demolition and construction activities. The project site is not considered a habitat area of particular concern, and eelgrass does not occur in or close to the pier replacement site. The construction of FES using concrete debris from demolition of Pier 12 would result in a loss of soft bottom habitat with localized adverse effects to EFH related to loss of food resources for benthic-feeding fish; however, these effects would be offset by long term benefits from creation of these artificial reef habitats, which are known to be associated with increased abundance and diversity of fish, including EFH species. A pre-, post and three-year post construction monitoring program would be conducted to validate fisheries recruitment and productivity benefits from the FES. The Navy has determined that the anticipated effects on EFH would be short-term and localized due to the non-continuous nature of the construction activities, and EFH Conservation Recommendations would not be necessary to avoid, minimize, or mitigate adverse effects to EFH. The project would cause no harm, harassment, or take of marine mammals under the Marine Mammal Protection Act. Therefore, these would be no significant impacts to biological resources.	
Terrestrial Biological Resources	The proposed action would not affect terrestrial biological resources because sensitive plant species and threatened or endangered animals and their habitat do not occur within or near the project site. Therefore, there would be no significant impacts.	The No-Action Alternative would not alter the project site or result in any activities or operations that would alter or affect plant communities or associated habitats or wildlife, or impact sensitive species. No impacts on terrestrial biological resources would occur.

Table 2.4-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
Land Use	The proposed action would not cause significant land use impacts because construction and operation of the replacement pier would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project site.	Under the No-Action Alternative, there would be no change in existing land use conditions, and no conflict with any applicable land use plan, policy, or regulation. No impact would occur.
Socioeconomics	The proposed action would not cause significant impacts to socioeconomic resources because construction and operation of the replacement pier would not restrict commercial or recreational activities, result in adverse effects on human health, or create any safety risks for populations in adjacent areas. Significant environmental justice impacts would not occur because the project would not have a disproportionately high and adverse impact on low impact or minority populations.	Under the No-Action Alternative, there would be no change in existing conditions for commercial or recreational activities, human health, or safety risk, and no environmental justice impacts would occur.
Transportation and Circulation	The proposed action would result in temporary increases in truck volumes on selected roadways during construction activities, but these increases would not be significant because they would not result in loss of service on roadways or intersections. A Traffic Control Plan would be prepared by the construction contractor and approved by the Facility Engineering and Acquisition Division and Base Security prior to construction. The proposed action would not have significant impacts related to vessel circulation because the project would result in negligible and temporary increases in vessel traffic that would not interfere with other commercial, military, or recreational vessel movements within San Diego Bay or during transit to the ocean dredged material disposal site.	Under the No-Action Alternative, there would be no change to transportation infrastructure or ground or vessel traffic. No transportation impacts would occur.
Noise	Airborne noise impacts from the project would be less than significant because levels at representative receptor sites, such as residential areas, schools, and parks, in the proximate project area would be below the daytime weekday construction ordinance limit. Underwater noise from project demolition and construction activities would not exceed potentially injurious levels and would not adversely affect fish, marine mammals, birds, and sea turtles because these species are highly mobile and could avoid	Under the No-Action Alternative, there would be no change in existing conditions for sensitive noise receptors, and no noise impacts would occur.

Table 2.4-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	these discontinuous, temporary disturbances.	
Aesthetics and Visual Resources	The proposed action would not result in significant impacts to aesthetic and visual resources because the replacement pier would be compatible with the existing visual quality and character of the project site.	For the No-Action Alternative, there would be no change in the existing aesthetic quality of the project site, and no visual resource impacts would occur.
Cultural Resources	The proposed action would have no effect on cultural resources because there are no identified archaeological sites or other historic properties located within the project footprint.	Under the No-Action Alternative, no construction activities or ground disturbances would occur. Therefore, no impacts on cultural resources would occur.
Public Access	The proposed action would occur within an area surrounded by a security barrier that restricts public access to the waterfront at NBSD. The proposed action would not impose new restrictions on the public's right of access to the sea in the coastal zone, so it would not adversely affect coastal resources. Expanding the ESQD arc would not expand the "standoff" distance (bayward extent) from the new pier or extend beyond NBSD boundaries so the arc expansion would not impact recreational uses of San Diego Bay or public access to areas outside of the existing security barrier. Therefore, there would be significant impacts.	Under the No-Action alternative, the existing access restrictions in the project area would remain in place; therefore, no effect would occur.
Safety and Environmental Health	The proposed action would not result in significant impacts to the public health or safety, including health and safety risks to children, because the project is located at NBSD, which has restricted public access, and a number of protective measures would be implemented to minimize safety risks. Prior to demolition of the existing pier, asbestos and lead based paint abatement would be performed by a licensed contractor. Activities in IR Site 1 would be governed by a site-specific health and safety plan and performed under the supervision of a certified industrial hygienist. Dredging contractor personnel would be trained in explosives safety procedures by the Navy's Explosive Ordnance Disposal units to minimize the potential risks associated with encountering unexploded ordnance in dredged sediments, and dredging operations would be conducted in accordance with the explosives safety plan.	Under the No-Action Alternative, the existing Pier 12 structure would continue to degrade and would expose military personnel to unsafe working conditions. There would be no change in existing impacts to the safety of the public or to environmental health.

Table 2.4-1. Summary of Potential Environmental Consequences by Resource.

Resource	*Proposed Action*	*No-Action Alternative*
	The Navy would use and enforce the U.S. Army Corps of Engineers Safety Manual (EM-55) for all construction activities. Facilities operations would be conducted in accordance with the Navy's Hazardous Materials Control and Management Program and Hazardous Waste Minimization Program.	
Utilities	The proposed action would not result in significant impacts to utilities because the project would not generate demands for water or electricity, or generate volumes of runoff, sewage, or solid wastes that would exceed the capacities of existing utilities. The Navy would recycle or reuse demolition debris to meet the current minimum diversion rate of 52 percent and assist the city of San Diego extend the life of landfills. The proposed action would result in upgraded utility infrastructure, such as the stormwater system and electrical generating capacity, on the replacement Pier 12, which would be a beneficial impact.	Under the No-Action Alternative, there would be no change in existing utilities and, therefore, no impacts. However, beneficial impacts from improved utilities on Pier 12 also would not occur.

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment and addresses the potential environmental effects from the proposed action at the Pier 12 project site. For the proposed FES sites, only resources that have potential impacts, such as air quality, marine water and sediment quality, marine biology, socioeconomics, marine transportation, and aesthetics, are addressed. The environmental effects from disposal of construction debris and dredged sediments in permitted landfills are addressed in the California Environmental Policy Act documents for these facilities. Also, the potential effects of disposal of dredged materials at the LA-5 ocean dredged material disposal site are addressed in the site designation EIS (USEPA 1988). These documents are incorporated herein by reference. An independent reassessment by users (i.e., the Navy) is not required as long as the use does not require a new or modified permit. Therefore, the environmental consequences of disposal of project related materials at permitted landfills and designated disposal sites are not addressed in this EA.

3.1 TOPOGRAPHY, GEOLOGY/SOILS, AND SEISMICITY

3.1.1 Affected Environment

The following section describes existing conditions for topography, geology/soils, and seismicity at the proposed Pier 12 project site.

3.1.1.1 Topography

The proposed action is located along the southeast margin of San Diego Bay, in an industrial, predominantly disturbed area, where previous dredging and filling has been completed for berth construction. The natural submarine topography has been altered in association with these activities (DoN 2000b). The main channel is 600 to 800 ft (183 to 244 m) wide and extends from the mouth of San Diego Bay east of Point Loma to the north side of NASNI at the aircraft carrier berth. The berth area has been dredged extensively to produce a turning basin. Depths in the main channel vary from 37 to 45 ft (11 to 14 m) (U.S. Geological Survey 1967). Bay depths gradually become shallower to the east and south of NBSD. The site bathymetry is discussed in Section 3.4.

3.1.1.2 Geology and Soils

The bottom sediments at the Pier 12 site consist primarily of silt, clay, and loose sands (DoN 2000b). The surficial materials are underlain by the Bay Point Formation, a late Pleistocene unit consisting of marine, fossiliferous, loosely consolidated, fine- to medium-grained sand (DoN 1993). Generally, the Bay Point Formation is only 5 to 10 ft (1.5 to 3 m) thick, but may attain thicknesses of 50 ft (15 m) locally. The depth of the Bay Point Formation beneath the Pier 12 site is indeterminate based on existing studies (DoN 2006b). The Linda Vista Formation, consisting of early Pleistocene interbedded sandstone and conglomerate, underlies the Bay Point Formation.

3.1.1.3 Seismicity, Faulting, and Hazards

The San Diego Bay region is considered seismically active, as is most of southern California. The San Diego area has experienced mild earthquakes during its recorded history (DoN 2000b). Although no catastrophic events have occurred, it should be noted that the historical record is relatively short compared to the recurrence interval of movement on some of the major faults.

Several regional and local active faults that could potentially affect existing or future developments within San Diego County include the San Andreas, San Jacinto, Elsinore, Agua Caliente, Rose Canyon, Vallecitos/San Miguel (Mexico), Coronado Banks (offshore), and San Clemente (offshore) (San Diego County 1991). Faults (or fault splays) of the Rose Canyon Fault Zone are the only known active faults within the San Diego Bay area (California Division of Mines and Geology 1993; Woodward-Clyde Consultants 1998; Group Delta Consultants 2000). These include, from west to east, the Spanish Bight, Coronado, and Silver Strand branches of the Rose Canyon Fault. In 1964, three earthquakes of Richter magnitude 3.5 had epicentral locations in the San Diego Bay, east of Naval Amphibious Base Coronado. It is possible that these earthquakes had their epicenter on the Silver Strand Fault. Due to the activity and proximity to the higher population centers and the downtown area, the Rose Canyon Fault and accessory splays have recently been and are currently the focus of numerous studies in the academic and professional communities. While extensive study of the Rose Canyon Fault Zone has occurred and is continuing, many seismic characteristics of this fault system are still not well understood, including slip rate, recurrence interval, and location of other associated and possibly active fault strands.

Hazards in the San Diego Bay area associated with seismic activity on nearby faults would include surface fault rupture, strong ground motion or shaking, and liquefaction. Surface fault rupture could potentially occur within the project area where the Silver Strand segment of the Rose Canyon fault zone intersects the ground surface. Two short segments of the Silver Strand fault have been located beneath Pier 12 (Group Delta Consultants 2000). Strong ground motion could occur from an earthquake on any one of the active local or regional faults mentioned previously in this section, the severity of which would depend on the distance to the epicenter of the earthquake, the size of the earthquake, and the physical conditions (e.g., soil type, depth to groundwater, depth to bedrock) at a particular point. Strong ground shaking causes, by far, the most damage experienced during earthquakes due to secondary effects. The maximum credible earthquake (maximum earthquake likely to occur) on a nearby fault associated with the Rose Canyon Fault Zone would be an earthquake of Richter magnitude 7.0. A peak horizontal ground acceleration (estimation of the ground motion associated with an earthquake) of 0.7 g (percent acceleration of gravity) is possible from an earthquake of this magnitude.

Liquefaction is a secondary effect produced as the result of seismic shaking. The conversion of the bayfront to marine and industrial use has resulted in extensive dredging and filling of the natural marsh and tidal flat system that formerly existed. Consequently, much of the areas affected by the proposed action are adjacent to or composed of artificial fill, deposited within the last 50 years as landfill development. Studies conducted regarding liquefaction in the San Diego area (Raines et al. 1991) identified three types of local deposits most susceptible to the hazards of liquefaction: (1) hydraulic (artificial) fill; (2) Holocene (Recent) fluvial or water transported deposits; and (3) Holocene estuarine deposits. Soil liquefaction occurs during

earthquake-induced ground shaking, when large excess pore water pressures results in loss of shear strength.

In addition, tsunamis are powerful, fast moving seismically induced ocean waves, and seiches are seismically induced waves occurring in a total or partially confined body of water. The potential for tsunami damage to land areas inside San Diego Bay exists but has not been quantified. Seiches are possible in San Diego Bay in the event of a relatively large earthquake in the San Diego area.

3.1.2 Environmental Consequences

3.1.2.1 Proposed Action

The Navy will adhere to the most stringent building code requirement found in the Uniform Facilities Code. The Uniform Facilities Code incorporates the International Building Code and the American Association of State Highway and Transportation Officials, which is a set of codes mostly relating to transportation requirements for bridges and similar projects. Therefore, no geologic processes such as landsliding or erosion would be triggered or accelerated in association with pier demolition, construction, or operations, and no significant impacts associated with earthquake-induced ground failure would occur as a result of the proposed project.

Mitigation Measures

Significant impacts on geological resources would not occur; therefore, no mitigation measures are proposed.

3.1.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no pier reconstruction or facility improvements, including the seismic upgrades that would be completed as part of the proposed action. The existing Pier 12 structure would continue to degrade and would represent unsafe working conditions for personnel.

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3.2 HYDROLOGY

3.2.1 Affected Environment

This section describes existing conditions for hydrology and surface water quality in the proposed project area. Groundwater resources are not considered because the proposed action has no onshore component other than minor excavation of a 50 ft by 50 ft and 10 ft (15.2 m by 15.2 m and 3 m) area at the shoreside base of the pier and temporary use of a laydown and CDF site.

NBSD is located within the Las Chollas drainage basin, consisting of Las Chollas, South La Chollas, Switzer, and Paleta Creeks (DoN 2006a). Areas adjacent to these drainage basins are located in a 100-year flood plain and are subject to flooding during storms. Paleta Creek, which discharges to San Diego Bay in an area north of Pier 12, and near the mole pier, laydown area, and CDF site, is especially susceptible to flooding due to its small drainage basin and channel capacity. The creek has approximately 70 percent of the floodway capacity to accommodate a 100-year flood. The project site is located in a Moderate Federal Emergency Management Agency flood zone and is subject to wave action (DoN 2006a).

Stormwater runoff from NBSD is regulated under National Pollutant Discharge Elimination System (NPDES) Permit No. CA0109169 and State Water Resources Control Board Order No. R9-2009-0100 (adopted 12 August 2009). Stormwater runoff on Pier 12 is controlled by a series of storm drains that discharge into San Diego Bay. A BOWTS pipeline attached along the quaywall carries bilge and oily waste and is Conditionally Authorized for Tiered Permitting and regulated by the Department of Environmental Health as a hazardous waste tank system. The BOWTS system is discussed in Section 3.15.

3.2.1.1 Installation Restoration Site

The Department of Defense (DoD) established the Installation Restoration Program in 1975 to provide guidance and funding for the investigation and remediation of hazardous waste sites caused by historical disposal activities at military installations (NBSD 2006a). The purpose of the Installation Restoration Program is to identify, investigate, and clean up or control releases of hazardous substances from past waste disposal operations and hazardous material spills at Navy activities (OPNAVINST 5090.1C CH 18; DoN 2007). The goal of the Installation Restoration Program is to reduce the risk to human health and the environment and to complete cleanup in a cost effective manner. The Installation Restoration Program is carried out in accordance with all federal, state and local laws. The primary federal laws are Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendment and Reauthorization Act (SARA).

In the project vicinity, four former ship repair basins correspond to an IR site referred to as Site 1 (Former Ship Repair Basin; NBSD 2006a). Two of the basins, Basins 3 and 4, are located between Piers 10 and 12 (Figure 1.3-1). The Navy is managing the site under the Installation Restoration Program to provide compliance in accordance with the procedural and substantive requirements of the Comprehensive Environmental Response, Compensation, and Liability Act as amended by the Superfund Amendment and Reauthorization Act, including compliance with applicable or relevant and appropriate state laws.

Basins 3 and 4 were about 400 ft long, 80 ft wide, and 28 ft deep, with sheet piling sides and unlined bottoms (NBSD 2006a). They are separated from San Diego Bay by a steel-reinforced quaywall. The basins were used as ship repair wet docks from the early 1940s to the end of World War II. From 1945 to about 1972 the basins were used as informal, unrestricted disposal sites for both hazardous and nonhazardous solid wastes that included scrap metals, lubricants, and oils from decommissioned ships (Bechtel 1999). The primary chemicals of concern were various metals (arsenic, beryllium, chromium, copper, and lead), polychlorinated biphenyls (PCBs, such as Aroclors 1254 and 1260), and polycyclic aromatic hydrocarbons (such as benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a]anthracene, and indeno[1,2,3-cd]pyrene). A removal action at Basin 4 in 1997 excavated a portion of the contaminated soil and debris from the upper 10 ft. The site was subsequently backfilled with clean sediment and paved over for parking. Within the excavated area, the potential risk to human health was reduced. However, subsurface utilities and the quaywall construction supports precluded excavation of the westernmost portion of the basin (Bechtel 1999). A removal site evaluation report was completed in 2000 that recommended further action due to elevated concentrations of metals and semi-volatile organic compounds, such as polychlorinated biphenyls and polycyclic aromatic hydrocarbons. A remedial investigation was conducted between 2003 and 2006, and a feasibility study/remedial investigation is ongoing to address human health risk and potential ecological risk at Site 1, including Basin 4 (NBSD 2006a; D. Belton, personal communication 2010).

The Preliminary Coastal Contaminant Migration Monitoring Assessment was conducted in 2005-2006 as a component of the remedial investigation at Basins 3 and 4 (NBSD 2006a). The remedial investigation evaluated potential migration of contaminants from the basins through and under the quaywall and into San Diego Bay. The results showed no releases through the quaywall in the vicinity of Basin 4, although some sampling results suggested a weak discharge under the quaywall (NBSD 2006a). An independent review concluded that localized seepage has been demonstrated, especially near the quaywall, but there was no evidence of subsurface water contamination related to Basins 3 and 4 (NBSD 2006b). Basin 4 is currently open pending completion of the feasibility study (NBSD 2006c).

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

There is a potential for disturbance to surface water quality during the 24 months of pier demolition and construction due to accidental releases or spills of fuels, demolition debris, or construction material at the project site. The project would not construct any temporary or permanent structures that would increase the potential for flooding in Paleta Creek, Paleta Channel, or San Diego Bay, restrict or redirect runoff flows or cause localized flooding at NBSD, or erode sediments or other materials from the CDF or construction site. The potential for erosion, transport, and releases to San Diego Bay of construction materials via stormwater runoff would be minimized by development and implementation of a construction storm water pollution prevention plan (SWPPP) with Best Management Practices (BMPs) in accordance with NPDES Permit No. CAS000002, State Water Resources Control Board Order No. 99-08-DWQ (General Permit for Storm Water Discharges Associated with Construction Activity), and Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity. Where construction activities would disturb one acre or more, the General Permit

requires all dischargers to develop and implement a SWPPP that specifies BMPs to prevent all construction pollutants from contacting stormwater. The intent is to keep all products of erosion from moving offsite into receiving waters; eliminate or reduce non-stormwater discharges to stormwater systems; and perform inspections of all BMPs. The construction SWPPP would also apply to operations at the laydown and CDF sites. In particular, the temporary CDF would be constructed and operated such that decant water from the CDF would be prevented from leaving the site, reaching the storm drain system, or discharging directly to San Diego Bay.

Typical stormwater control measures associated with construction SWPPPs include the following general categories (USEPA 2005):

- Construction site planning and management;
- Erosion control;
- Runoff control;
- Sediment control; and
- Good housekeeping/materials management.

Implementation, inspection, and maintenance of BMPs would prevent impacts to surface water quality associated with spills of industrial solvents and petroleum products.

The Navy would require the contractor to prepare and implement a comprehensive debris management plan that addresses types of debris expected, separation and retrieval methods, and disposal methods. Accidental releases of demolition and construction debris to San Diego Bay would be prevented by placing booms around the site. The project would utilize catch devices and sheeting to capture and contain debris and materials that may be generated by the project. Debris generated from work on the barge would also be captured on-board work barges. All captured material would be swept and disposed of properly. The Navy would also require the contractor to prepare and implement a spill response plan (e.g., Spill Prevention, Control, and Countermeasure) to clean up any fuel or fluid spills that occurred during pier demolition and construction.

Subsequent to pier construction, the existing base-wide industrial SWPPP would be modified to include specific BMPs for the new pier, consistent with proposed pier activities. Based on the existing SWPPP (associated with Order No. R9-2009-0100), these BMPs are expected to include:

BMP 001 Label all Drums, Cans, Containers, Tanks, and Valves

BMP 002 Restrict Access to Area and Equipment

BMP 003 Perform Regular Cleaning

BMP 004 Avoid Hosing Down the Site

BMP 005 Perform Regular Pavement Sweeping

BMP 006 Control Spills

BMP 029 Maintain Equipment in Good Condition

BMP 032	Dispose of Obsolete Equipment, Inoperable Vehicles, and Surplus Materials
BMP 033	Check Vehicles and Equipment for Leaks
BMP 041	Wash Equipment and Vehicles in Designated areas
BMP 044	Use Drip Pans Under Leaking Equipment
BMP 054	Properly Store Containers
BMP 057	Do not Store Used Parts or Containers Directly on Ground
BMP 061	Employ Proper Handling Procedures to Transport Materials and Waste
BMP 061B	Store Liquids and Significant Materials within a Building or Covered Area
BMP 071	Keep Tanks, Piping, and Valves in Good Condition
BMP 111	Regularly Inspect and Test Equipment

In addition, the Navy would incorporate stormwater measures into the design of the replacement pier, including filtration devices to remove suspended solids, oil, and grease prior to discharge to San Diego Bay (DoN 2010a). The system installed on Pier 12 would meet all established benchmark values, numerical limits, and acute /chronic toxicity requirements for the new NBSD NPDES Permit (CA0109169) to be issued in 2011. Some of these limits/values are still in the process of being worked out with the RWQCB/USEPA but will be applicable by the time the project is completed. These measures would minimize potential impacts on surface water quality from pollutant inputs associated with vessel hoteling activities. Therefore, no significant hydrology and surface water quality impacts would occur.

The proposed action would require construction activities (e.g., excavation and/or trenching) within the IR Site 1, Basin 4. Naval Facilities Engineering Service Center (NFESC) recently conducted a study of the structural integrity of the quaywall bordering Basin 4 of Site 1 as it relates to the proposed action (DoN 2009). A copy of the report is provided in Appendix D. The study examined the potential for the proposed action to negatively impact the structural integrity of the quaywall relative to hazardous material contained by Site 1. The study concluded that the major failure modes could involve either overstressing of the sheet pile section in bending, or yielding of the anchoring system, usually associated with excessive vertical loading behind the face of the wharf. Assuming the quaywall deck would not be exposed to vertical overload during construction of the new pier, the major threat would be due to vibratory stresses set up during pile driving for the pier. However, the sheet piles were seated in a dense sandy soil and should not undergo additional settlement. Also, dynamic loads would be applied from outside of the sheet pile wall and should not lead to failure (DoN 2009). Another factor considered was the possibility that dredging outside the sheet pile face could undermine the sheet piling or initiate the formation of erosion channels under the sheet pile wall. The proposed dredging level adjacent to the sheet pile wall is approximately -16 feet MLLW, but the pile tips would extend down to -43 feet MLLW. The relatively shallow dredging level outside the quaywall is maintained by an additional sheet pile wall driven offshore of the quaywall face (DoN 2009).

Damage to the existing quaywall by accidental impacts from construction barges or equipment during the construction of the proposed new pier is possible. However, based on the NFESC

study, a Structural Engineer has made a determination that construction of a new pier seaward of the quaywall should not adversely impact the integrity of the quaywall (DoN 2009). As a precautionary measure the Navy would implement a monitoring system (see Chapter 2) to insure early detection of any impact or damage to the quaywall from dredging or pile driving actions and so that any release of contaminants to San Diego Bay would be detected, thereby allowing assessment and implementation of response actions. Therefore, no significant impacts to surface water quality would result from the proposed action.

Work within the basins would be performed under the oversight of a California Certified Industrial Hygienist. The Navy also would require a site-specific Health and Safety Plan be developed that addresses and mitigates contaminants known to be within IR Site 1. The Health and Safety Plan shall be signed by the Certified Industrial Hygienist and submitted for review to the Navy Environmental Health Center. The Health and Safety Plan shall be implemented by the contractor during the field activities. Any personnel who could potentially come into contact with the material contained within IR Site 1 would be properly trained and the appropriate level of protective clothing/equipment would be worn.

Mitigation Measures

Significant impacts would not occur; therefore, no mitigation measures are proposed.

3.2.2.2 No-Action Alternative

Under the No-Action Alternative, the existing pier would not be replaced, and no changes to the existing hydrology and surface water quality would occur. Therefore, no impacts would occur. However, under the No-Action Alternative beneficial impacts from an improved storm water filtration system also would not occur as would be the case under the proposed action.

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3.3 AIR QUALITY

3.3.1 Affected Environment

Air emissions produced by the proposed action would mainly affect air quality within the San Diego Bay region, which is part of the San Diego Air Basin. This section describes the existing air quality within the San Diego Air Basin and the air regulations that would apply to the proposed action and the No-Action Alternatives.

Air quality in a given location is defined by pollutant concentrations in the atmosphere and is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). One aspect of significance is the concentration of a pollutant in comparison with a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The national standards, established by the USEPA, are termed the National Ambient Air Quality Standards. The National Ambient Air Quality Standards represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded (USEPA 2010a). State standards, established by the California Air Resources Board, are termed the California Ambient Air Quality Standards. The California Ambient Air Quality Standards are at least as restrictive as the National Ambient Air Quality Standards and include pollutants for which national standards do not exist. Table 3.3-1 lists the current California Ambient Air Quality Standards and National Ambient Air Quality Standards.

Table 3.3-1. California and National Ambient Air Quality Standards.

Pollutant	*Averaging Time*	*California Standards*	*Federal Standards*[a]	
		Concentration	*Primary* [b, c]	*Secondary* [b, d]
Ozone (O3)	1 Hour	0.09 ppm (180 µg/m³)	– [e]	– [e]
	8 Hour	0.07 ppm (137 µg/m³)	0.075 ppm (147 µg/m³)	Same as Primary Standard
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m³	150 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m³	–	–
Fine Particulate Matter (PM2.5)	24 Hour	–	35 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	–
	1 Hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	
Nitrogen Dioxide (NO2)	Annual Arithmetic Mean	0.03 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	Same as Primary Standard
	1 Hour	0.18 ppm (339 µg/m³)	0.10 ppm [f] (188 µg/m³)	

Table 3.3-1. California and National Ambient Air Quality Standards.

Pollutant	*Averaging Time*	*California Standards*	*Federal Standards*[a]	
		Concentration	*Primary* [b, c]	*Secondary* [b, d]
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m³)	0.14 ppm (367 µg/m³)	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m³)
	1 Hour	0.25 ppm (655 µg/m³)	0.075 ppm (196 µg/m³)	–
Lead	30 Day Average	1.5 µg/m³	–	–
	Calendar Quarter	–	1.5 µg/m³	Same as Primary Standard
	Rolling 3-month average	–	0.15 µg/m³	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer – visibility of ten miles or more due to particles when relative humidity is less than 70%.	–	
Sulfates	24 Hour	25 µg/m³	–	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	–	
Vinyl Chloride	24 Hour	0.01 ppm 0.02 (26 µg/m³)	–	

Notes:

a. Standards other than the 24-hour PM10, 24-hour PM2.5, and those based on annual averages are not to be exceeded more than once a year.
b. Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis. ppm = parts per million; µg/m³ = micrograms per cubic meter.
c. Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that states implementation plan is approved by the USEPA.
d. Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
e. USEPA revoked the 1-hour ozone standard of 0.12 ppm in all areas, although some areas have continuing obligations under that standard.
f. 1-hour NO2 standard, is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations.

The main air quality pollutants of concern for the project region include volatile organic compounds (VOCs), ozone (O_3), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SOx), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly volatile organic compounds and nitrogen oxides. There are no established ambient standards for volatile organic compounds. Ambient standards have been established for nitrogen dioxide (NO_2).

3.3.1.1 Region of Influence

Identifying the Region of Influence for air quality requires knowledge of the types of pollutants being emitted, pollutant emission rates, topography, and meteorological conditions. The

Region of Influence for inert pollutants (pollutants other than ozone and its precursors) is generally limited to a few miles downwind from a source. The Region of Influence for photochemical pollutants, such as ozone, can extend much farther downwind than for inert pollutants. In the presence of solar radiation, the maximum effect of volatile organic compounds and nitrogen oxides emissions on ozone levels usually occurs several hours after they are emitted and many miles from the source. Therefore, the Region of Influence for ozone from project emissions could include much of the San Diego Air Basin, which includes all of San Diego County.

3.3.1.2 Baseline Air Quality

The USEPA designates all areas of the U.S. in terms of having air quality better than or equal to (attainment) or worse than (nonattainment) the National Ambient Air Quality Standard. An area generally is in nonattainment for a pollutant if its National Ambient Air Quality Standard has been exceeded more than once per year. Former nonattainment areas that have attained the National Ambient Air Quality Standard are designated as maintenance areas. Presently, the San Diego Air Basin is in attainment of the National Ambient Air Quality Standard for all pollutants except ozone. The USEPA designated the San Diego Air Basin as a former "Subpart 1" nonattainment area for the 8-hour ozone standard on 16 January 2009 (USEPA 2010b). In 2003, the USEPA re-designated the San Diego Air Basin as an attainment area for the federal 1-hr ozone standard. The western portion of the San Diego Air Basin (the portion of the County generally west of the interior desert region) was historically in nonattainment of the National Ambient Air Quality Standard for carbon monoxide. Due to a reduction in emissions caused by national emission standards for new vehicles and a state vehicle emissions testing program, the region has attained the carbon monoxide standards since 1991. As a result, the region was re-designated to attainment of the carbon monoxide National Ambient Air Quality Standard by the USEPA in June 1998 and it is now considered a maintenance area for carbon monoxide.

With regard to the California Ambient Air Quality Standards, the San Diego Air Basin is in attainment for all air pollutants except ozone, PM_{10}, and $PM_{2.5}$. The county is considered a severe ozone nonattainment area by the California Air Resources Board. The severe designation is given to an area if the fourth highest pollutant concentration recorded in a 3-year period is between 0.16 and 0.20 parts-per-million.

3.3.1.3 Greenhouse Gases

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere by absorbing infrared radiation. Greenhouse gas emissions occur from natural processes and human activities. Water vapor is the most important and abundant greenhouse gas in the atmosphere. However, human activities produce only a very small amount of the total atmospheric water vapor. The most common greenhouse gases (other than water vapor) emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide. The main source of greenhouse gases from human activities is the combustion of fossil fuels, including crude oil and coal. Examples of greenhouse gases created and emitted primarily through human activities include fluorinated gases (hydro fluorocarbons and per fluorocarbons) and sulfur hexafluoride. With the addition of nitrogen trifluoride, seven greenhouse gases are regulated by the State of California.

Each greenhouse gas is assigned a global warming potential (GWP), which is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to carbon dioxide, which has a value of one. For example, methane has a global warming potential of 21, which means that it has a global warming effect 21 times greater than carbon dioxide on an equal-mass basis (Intergovernmental Panel on Climate Change 2007). To simplify greenhouse gas analyses, total greenhouse gas emissions from a source or operation are often expressed as a carbon dioxide equivalent (CO_2e). The carbon dioxide equivalent is calculated by multiplying the emissions of each greenhouse gas by its global warming potential and adding the results together to produce a single, combined emission rate representing all greenhouse gases. While methane and nitrous oxide have much higher global warming potentials than carbon dioxide, carbon dioxide is emitted in such higher quantities that it is the overwhelming contributor to the carbon dioxide equivalent from both natural processes and human activities.

3.3.1.4 Regulatory Setting

Federal Requirements

According to the USEPA General Conformity Rule, a project would conform to the most recent USEPA-approved State Implementation Plan (SIP) if its annual construction or operational emissions will be less than the applicable "*de minimis*" thresholds for criteria pollutants classified as "nonattainment" or "maintenance" within a given area. Based on the present attainment status of the San Diego Air Basin, these *de minimis* thresholds are 100 tons per year of volatile organic compounds, nitrogen oxides, or carbon monoxide. The General Conformity Rule applies to the geographic region encompassed by a State Implementation Plan, which is defined as any area onshore and up to 3 nautical miles (nm) (3.5 miles [5.6 km]) from shore.

Currently, federal agencies are required by federal laws, Executive Orders (EO), and agency policies to report and reduce their greenhouse gas emissions. Strengthening Federal Environmental, Energy, and Transportation Management Executive Order (13423) was signed by President Bush on 24 January 2007, instructing federal agencies to conduct their environmental, transportation, and energy-related activities in an environmentally, economically sound, efficient, and sustainable manner. The Federal Leadership in Environmental, Energy, and Economic Performance Executive Order (13514) was signed by President Obama on 5 October 2009. This Executive Order expands on the energy reduction and environmental performance requirements of Executive Order 13423 and it adds requirements for reporting and reducing greenhouse gas emissions. The goal of Executive Order 13514 is "to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gases a priority for Federal agencies." Federal agencies are required to meet a series of deadlines critical to achieving the greenhouse gas reduction goals of Executive Order 13514.

The USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule on 30 October 2009 (USEPA 2009). The rule requires suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities with stationary sources that emit 25,000 metric tons (mT) or more per year of carbon dioxide equivalent emissions to collect emissions activity data and submit annual emissions reports to the USEPA beginning with year 2010 operations. The rule does not apply to mobile sources of greenhouse gases.

On 18 February 2010 the Council on Environmental Quality proposed for the first time draft guidance on how federal agencies could evaluate the effects of climate change and greenhouse gas emissions for NEPA documentation (CEQ 2010). Specifically, if a proposed action emits 25,000 metric tons or more of carbon dioxide equivalents on an annual basis, agencies could consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. The Council on Environmental Quality does not propose this reference point as an indicator of a level of greenhouse gas emissions that may significantly affect the quality of the human environment, but notes that it serves as a minimum standard for reporting emissions under the Clean Air Act.

Local Regulations

The San Diego County Air Pollution Control District is responsible for regulating stationary sources of air emissions in the San Diego Air Basin. The San Diego County Air Pollution Control District has developed air quality plans designed to reduce emissions to a level that will bring the San Diego Air Basin into attainment of the ambient air quality standards. Control measures for stationary sources proposed in the air quality plans and adopted by the San Diego County Air Pollution Control District are incorporated into the San Diego County Air Pollution Control District Rules and Regulations which include new source review for permitting, prohibitory rules for controlling visible emissions and release of particulate matter, and volatile organic compound limits on materials used during various operations (SDCAPCD 2010). The provisions for the Conformity of General Federal Actions are contained in San Diego County Air Pollution Control District Rule 1501.

The *California Global Warming Solutions Act of 2006*, widely known as Assembly Bill (AB) 32, requires the California Air Resources Board to develop and enforce regulations that will reduce statewide greenhouse gas emissions to 1990 levels by 2020. The bill sets a timeline for the California Air Resources Board to adopt a Scoping Plan that will map out how the state will achieve this target, including regulatory, voluntary, and market-based mechanisms beginning in 2012. California will have to reduce greenhouse gas emissions by about 30 percent below business-as-usual predictions of year 2020 greenhouse gas emissions to achieve this goal. Greenhouse gas emissions limits and reduction measures adopted in 2011 become enforceable.

3.3.1.5 Regional and Local Air Pollutant Sources

An emission rate represents the mass of a pollutant released into the atmosphere by a given source over a specified period of time. Emission rates can vary considerably depending on the type of source, time of day, and schedule of operation. The San Diego County Air Pollution Control District periodically updates emissions for the entire San Diego Air Basin for purposes of forecasting future emissions, analyzing emission control measures, and for use in regional air quality modeling. Table 3.3-2 lists the 2008 air emissions inventory for the San Diego Air Basin.

The largest regional sources of air emissions are on-road vehicles. The year 2008 emissions inventory determined that on-road vehicles emitted 42 percent of the volatile organic compounds, 56 percent of the nitrogen oxides, and 67 percent of the carbon monoxide emissions within the San Diego Air Basin (ARB 2010). Other large sources of volatile organic compounds are surface coatings and solvents. Fine particulate matter occurs from both primary sources, such as combustion, and secondary sources, due to atmospheric reactions of primary emissions.

Coarser particles mainly occur from soil-disturbing activities, such as construction, mining, agriculture, and vehicular road dust.

Table 3.3-2. 2008 Air Emissions Inventory for the San Diego Air Basin.

Pollutant	*Tons Emitted per Year*
VOC	56,977
CO	300,103
NOx	61,612
SOx	730
PM_{10}	41,574
$PM_{2.5}$	11,315
Source: ARB 2009	

3.3.1.6 Impact Evaluation Approach

The criteria to determine the significance of air quality impacts are based on federal, state, and local air pollution standards and regulations. The San Diego County Air Pollution Control District has not established criteria for assessing the significance of air quality impacts for NEPA purposes. However, for the present analysis impacts were considered potentially significant if project emissions were projected to exceed the thresholds that trigger a conformity determination in the San Diego Air Basin (i.e., 100 tons per year of volatile organic compounds, nitrogen oxides, or carbon monoxide). This analysis also used the conformity *de minimis* thresholds of 100 tons per year for sulfur dioxide, PM_{10}, and $PM_{2.5}$ which apply for maintenance areas.

If the project emissions exceeded any of the *de minimis* thresholds described above, further analysis of the emissions and their consequences would be performed to assess whether there was a significant likelihood of significant impacts on air quality and whether a conformity analysis was required. The nature and extent of such an analysis would depend on the specific circumstances; for example, the analysis could range from a more detailed and precise examination of the likely emitting activities and equipment, to air dispersion modeling analyses. If project emissions were determined to increase ambient pollutant levels from below to above a national or state ambient air quality standard, those emissions would be considered significant.

3.3.2 Environmental Consequences and Mitigation Measures

Air quality impacts associated with the Pier 12 replacement project, including FES sites, would result from the use of vehicles including trucks hauling dredged material for upland disposal, tugboats, heavy machinery, and support equipment (e.g. air compressors, pumps, etc.), as detailed in Appendix A. Impacts are measured in terms of total air pollutant emissions generated by the equipment, vessels, and vehicles that would be needed to complete the proposed action. Power ratings and hours of use for the proposed action are detailed in Appendix B.

Factors needed to derive construction source emission rates were obtained from the *ARB OFFROAD Emissions Model* for off-road equipment (ARB 2006a). Factors needed for on-road trucks, such as those used for the transport of construction debris, were obtained from the

California Air Resources Board EMFAC2007 Model (ARB 2006b). Factors for marine vessels were obtained from Port of Los Angeles (2010).

3.3.2.1 Proposed Action

The proposed action consists of (1) demolition of the existing Pier 12; (2) transport and placement of concrete debris generated from the Pier 12 demolition for use as FES; (3) dredging the sea floor around Pier 12 to a depth of -37 ft and transporting the dredged material for disposal at sea (LA-5 site) or upland (Otay Landfill), depending on suitability of the material based on agency-defined standards; (4) constructing a new single deck, concrete berthing pier at Pier 12; (5) performing shoreside excavation for the new pier base; and (6) implementation of supporting utility and security infrastructure for the new pier. Compared to all other construction activities, implementation of utility and security support components would be inconsequential, and therefore are not included in the air quality analysis.

Table 3.3-3 summarizes the total emissions that would occur from the proposed action within the San Diego Air Basin project region. These data show that project construction emissions would remain well below applicable *de minimis* thresholds for the San Diego Air Basin or any maintenance area. Therefore, the proposed action would conform to the San Diego Air Basin SIP and would not trigger a conformity determination. Greenhouse gas emissions associated with the proposed action are addressed in Chapter 4 (Cumulative Impacts).

Table 3.3-3. Construction Criteria Pollutant Emissions Associated with the Proposed Action at NBSD.

Activity Type	*AIR POLLUTANT EMISSIONS (TONS/YEAR)*						
	VOC	*CO*	*NOx*	*SOx*	*PM10*	*PM2.5*	*CO2*
Existing Pier 12 Demolition							
Piling Removal	0.05	0.14	0.33	0.0004	0.02	0.02	29.63
Deck Removal	0.02	0.10	0.23	0.0002	0.01	0.01	20.56
Asphalt Debris Removal	0.01	0.03	0.04	0.00005	0.003	0.00	3.89
Fish Enhancement Structures	0.01	0.05	0.24	0.0002	0.01	0.40	13.16
Dredging and Ocean Disposal	0.99	4.00	12.64	0.01	0.41	0.30	922.66
Dredging and Landfill Disposal	0.30	1.16	2.05	0.002	0.16	0.16	187.08
New Pier 12 Construction							
Piling Installation	0.11	0.34	1.16	0.001	0.04	0.04	106.66
Deck Installation	0.59	2.00	4.19	0.005	0.21	0.21	730.79
Shoreside Excavation	0.03	0.08	0.16	0.0002	0.01	0.01	15.69
Total Conformity Emissions (1)	**2.12**	**7.89**	**21.03**	**0.02**	**0.87**	**0.87**	**2,030**
Conformity *de minimis* Thresholds	**100**	**100**	**100**	**100**	**100**	**100**	**NA**
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**NA**
Note: (1) Emissions do not add up exactly due to rounding of decimal points.							

Mitigation Measures

Since the proposed action would not produce any significant air quality impacts, no mitigation is proposed.

3.3.2.2 No-Action Alternative

The No-Action Alternative would not result in any activities or air quality impacts that differ from existing conditions. Therefore, the No-Action Alternative would not produce any impacts on air quality.

3.4 MARINE SEDIMENTS, BATHYMETRY, AND WATER QUALITY

3.4.1 Affected Environment

This section describes existing conditions for sediment quality, bathymetry and water circulation, and water quality at the proposed project area that includes Pier 12 and the proposed FES sites.

3.4.1.1 Definition of Resource

Marine water and sediment quality describes the chemical and physical composition of water and sediment in San Diego Bay as affected by natural conditions and human activities. For the purposes of this analysis, marine water and sediment quality is evaluated with respect to possible disturbances of existing conditions and releases of chemical contaminants associated with the proposed project activities. Bathymetry refers to spatial patterns in the water depths and its relationship to circulation and water flow in the vicinity of Pier 12.

"Beneficial uses" are the basis for marine water quality protection under the San Diego Region Basin Plan (RWQCB 1994 and amendments through April 2007). Existing beneficial uses for San Diego Bay include: industrial service supply; navigation; contact water recreation; non-contact water recreation; commercial and sport fishing; preservation of biological habitats of special significance; marine habitat; estuarine habitat; wildlife habitat; habitat for threatened or endangered species; spawning habitat; migration of aquatic organisms; and shellfish harvesting. Once beneficial uses and water quality objectives are established, it is possible to specify water quality standards, which are mandated for all water bodies within the state under the Clean Water Act.

3.4.1.2 Marine Sediment Quality

The soft bay sediments within the Pier 12 project footprint consist primarily of a mixture of sand and silt (DoN 2010b). Based on the 2010 testing results, the sand content of sediments that would be dredged from the project footprint ranges from 32 to 64 percent and the silt content ranges from 26 to 52 percent. Proportions of clay and gravel sized sediments typically are less than 20 percent and 10 percent, respectively (DoN 2010b). The proportion of fines (silt plus clay) in the dredged sediments that are considered suitable for ocean disposal (discussed below) ranges from 30 to 50 percent. Because the combined proportions of sand and gravel are less than 80 percent, sediments dredged from the project site would be unsuitable for beach nourishment or other beneficial uses.

A number of previous studies have characterized sediment quality in the vicinity of Pier 12. Core samples collected in 1994 between Piers 11 and 12 contained elevated levels of copper, mercury, silver, and zinc, as well as high molecular weight polycyclic aromatic hydrocarbons (DoN 1995c). Biological testing of sediments indicated statistically significant amphipod toxicity. Sediments collected in 1997 between the Mole Pier and Pier 13 contained elevated mercury concentrations (DoN 1998). Elevated metals and polycyclic aromatic hydrocarbon concentrations also occurred in specific areas, but overall sediment contamination was low when averaged over the entire site. The sediment testing study in the vicinity of former Piers 10 and 11 (located approximately 500 ft [150 m] to the northwest of Pier 12) indicated the majority

of the material was suitable for LA-5 ocean disposal (DoN 2000a). Only 1 of the 10 test sites (P-326 Site 1) had statistically significant amphipod toxicity that precluded ocean disposal.

The Navy conducted a sediment characterization study within the dredging footprint for Pier 12 in 2005 (DoN 2006b). Concentrations of individual chemical contaminants were comparable to levels measured near Piers 10 and 11. Copper, lead, and zinc sediment concentrations were generally elevated next to the pier, whereas mercury levels were elevated throughout the dredging footprint. Initial biological testing indicated significant solid phase toxicity using the amphipod *Eohaustorius* in five out of the seven sites tested. The toxicity observed was not consistent with the generally low sediment contaminant concentrations, and these results were considered unrepresentative of sediment quality near Pier 12. Sediment testing was repeated in 2006 (Phase II) and confirmed the slightly elevated concentrations of a few metals (mercury, copper, lead), as well as the absence of detectable pesticides, polychlorinated biphenyls and phenols (DoN 2006b). Solid phase toxicity testing using three species (*Eohaustorius*, *Ampelisca,* and *Neanthes*) indicated only one case of significant toxicity (i.e., a single species for a single site). Results of other solid phase testing indicated that the limiting permissible concentration was met at all sites. Suspended particulate phase and bioaccumulation test results did not indicate significant toxicity or potentials for contaminant bioaccumulation. Overall, the results of sediment testing indicated that Pier 12 sediments met the criteria for benthic, water column, and bioaccumulation limiting permissible concentrations and, therefore, were suitable for disposal at the LA-5 ocean disposal site.

Supplemental (confirmatory) testing of sediment quality within the Pier 12 dredging footprint was conducted in 2008 (Phase III). The purpose of the Phase III testing was to confirm that no substantial changes, such as an increase in any sediment contaminant levels, had occurred since the previous study in 2006. This testing involved collection of sediment core samples at the same 35 locations as the Phase II testing, and it used the same compositing scheme. Each of seven site composite samples, plus an ocean reference sediment sample, was analyzed chemically; no toxicity or bioaccumulation testing was performed (Kinnetic and Diaz Yourman 2009). Results from the Phase III testing indicated elevated levels of selected metals, as well as polycyclic aromatic hydrocarbons and polychlorinated biphenyls. Based on a review of the confirmatory testing results, USEPA and USACE concluded that the material had changed enough between sampling events to warrant further testing. Consequently, the Navy conducted a full Green Book Tier III re-evaluation of the study site (Phase IV) in 2010 (DoN 2010b). The re-evaluation included physical, chemical, and biological testing of sediment samples collected within the dredge footprint, as well as reference samples from a designated location near the LA-5 disposal site. Results of the 2010 testing showed slightly elevated concentrations of a few metals (mercury, copper, silver, and zinc) and polychlorinated biphenyls. No significant solid phase or suspended particulate phase toxicity was observed for any of the test sites, with the exception of "Area C-Top" (the surface sediment layer in Area C; Figure 3.4-1), which displayed significant solid phase toxicity in the amphipod tests only. Neither polychlorinated biphenyls nor copper were found to bioaccumulate at significant levels in test organisms. Polycyclic aromatic hydrocarbons were detected in clam tissues (not worms), but at low levels compared to sediment concentrations, indicating low bioaccumulation potential. Based on a review of these testing results, USEPA and USACE determined that a portion (45,160 cy) of the proposed dredged sediments associated with the upper surface layer (i.e., to depths of 3 to 5 feet below the mudline) in areas immediately adjacent to the existing

pier, including Area C Top, was unsuitable for ocean disposal. This was due to solid phase toxicity and sediment polychlorinated biphenyl concentrations that equaled or exceeded 50 parts-per-billion (ppb). Sediments considered unsuitable for ocean disposal are indicated in Figure 3.4-1. The bulk of the material (433,965 cy) was considered suitable for ocean disposal. This determination was documented in an e-mail from USEPA (A. Ota, dated 2 November 2010).

As part of the Phase IV testing, sediment extracts were tested using the Toxicity Characteristic Leaching Procedure (TCLP; USEPA Method 1311) that is designed to simulate landfill conditions and determine the mobility of both organic and inorganic analytes present in wastes, as well as to characterize waste as either hazardous or non-hazardous for the purposes of disposal. Results from the Toxicity Characteristic Leaching Procedure testing indicated that metal concentrations in the sediment extracts were up to several orders of magnitude lower than the corresponding maximum concentrations for contaminants for toxicity characteristic (per 40 CFR 261). Thus, the dredged sediments would not be considered hazardous wastes and would be suitable for disposal in a Class III landfill.

3.4.1.3 Bathymetry and Circulation

The bathymetry of the bay floor near Pier 12 is illustrated in Figure 3.4-2. Existing bottom depths within the project area range from –42.8 ft (-13 m) in the dredged slip near Pier 10 to about –19 ft (-5.8 m) along the southeastern edge of Pier 12. The bay bottom within most of the dredging footprint ranges from –27 to -32 ft (-8.2 to –9.8 m). Other than dredge cuts along the north and south sides of the Pier 12 area, no unusual topographic features occur in the project region.

Circulation patterns in the central and southern portions of San Diego Bay are primarily influenced by the tides. Tidal currents typically are stronger than wind or wave-induced currents, except during periods of relatively strong winds (San Diego Unified Port District [SDUPD] 1980). Tides in the Bay are mixed, semi-diurnal, with two low and two high tides per day. The mean tidal range for the Bay is 5.6 ft (1.7 m), and the maximum range is 9.8 ft (3.0 m). The volume of water exchanged during a tidal cycle is approximately one-third of the volume of the entire Bay (SDUPD 1980). Time requirements for complete exchange of bay waters with adjacent ocean waters range from one tidal cycle near the mouth to over one month in the South Bay (Largier 1997).

Typical tidal currents in the northern and central portions of San Diego Bay reach maximum velocities of 88 centimeters per second (cm/sec) during the flood (incoming) tide and 67 cm/sec on the ebb (outgoing) tide. Tidal currents in the South Bay are weaker, with maximum current velocities of approximately 10 cm/sec and velocities less than 10 cm/sec approximately 80 percent of the time (SDUPD 1980). Current speeds typically are higher in the deeper channel areas than along the shallower shorelines (DoN 1992). Primary flow directions are along the axis of the Bay following the deeper channels (Naval Command Control and Ocean Surveillance Center [NRaD] 1996). George and Largier (1995) estimated that waters within the main channel in the vicinity of Coronado Bridge may move distances up to 2.8 miles (3.6 km) during one tidal cycle, with good mixing within this portion of the Bay.

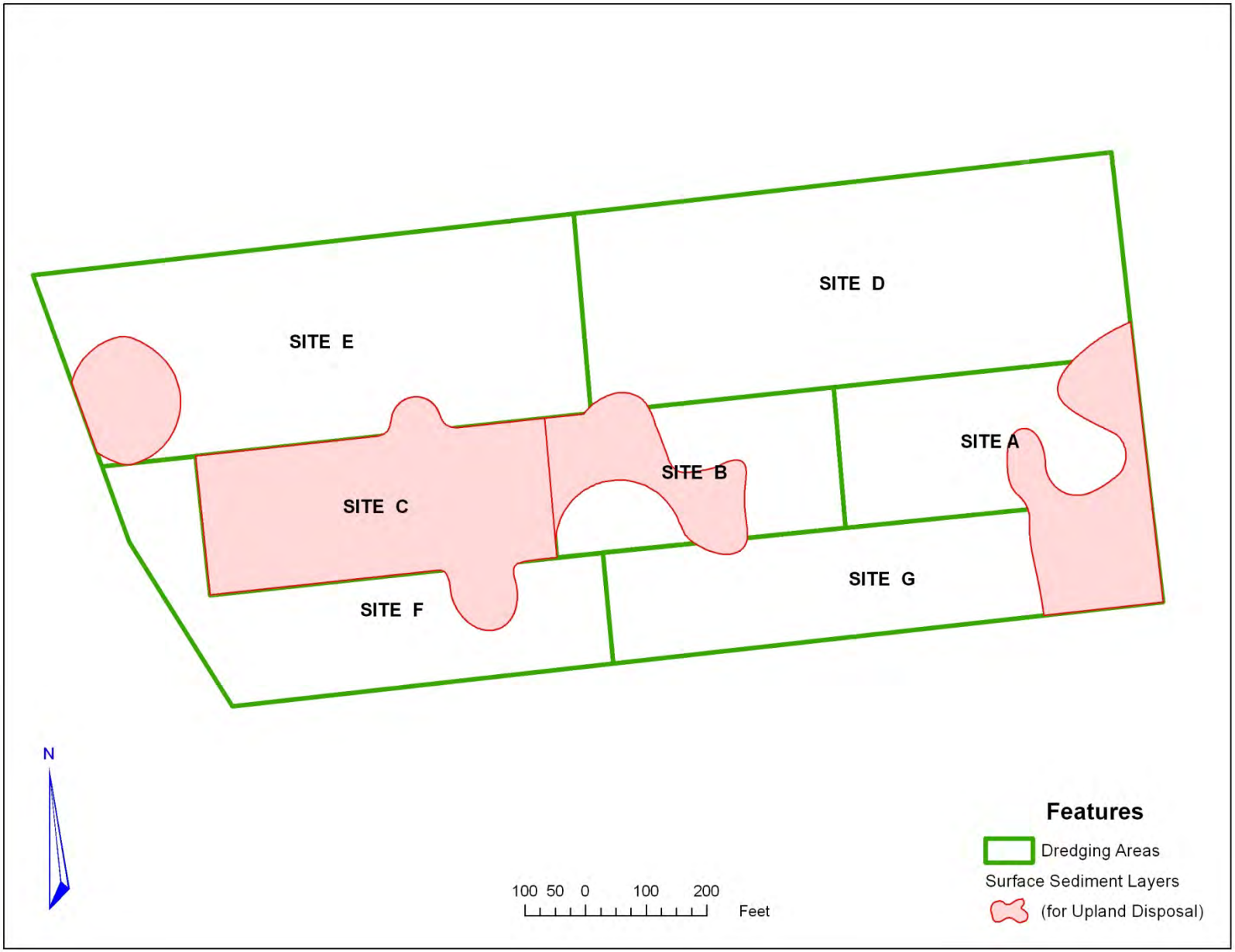

Figure 3.4-1. Dredging Footprint for Sediments Requiring Upland Disposal.

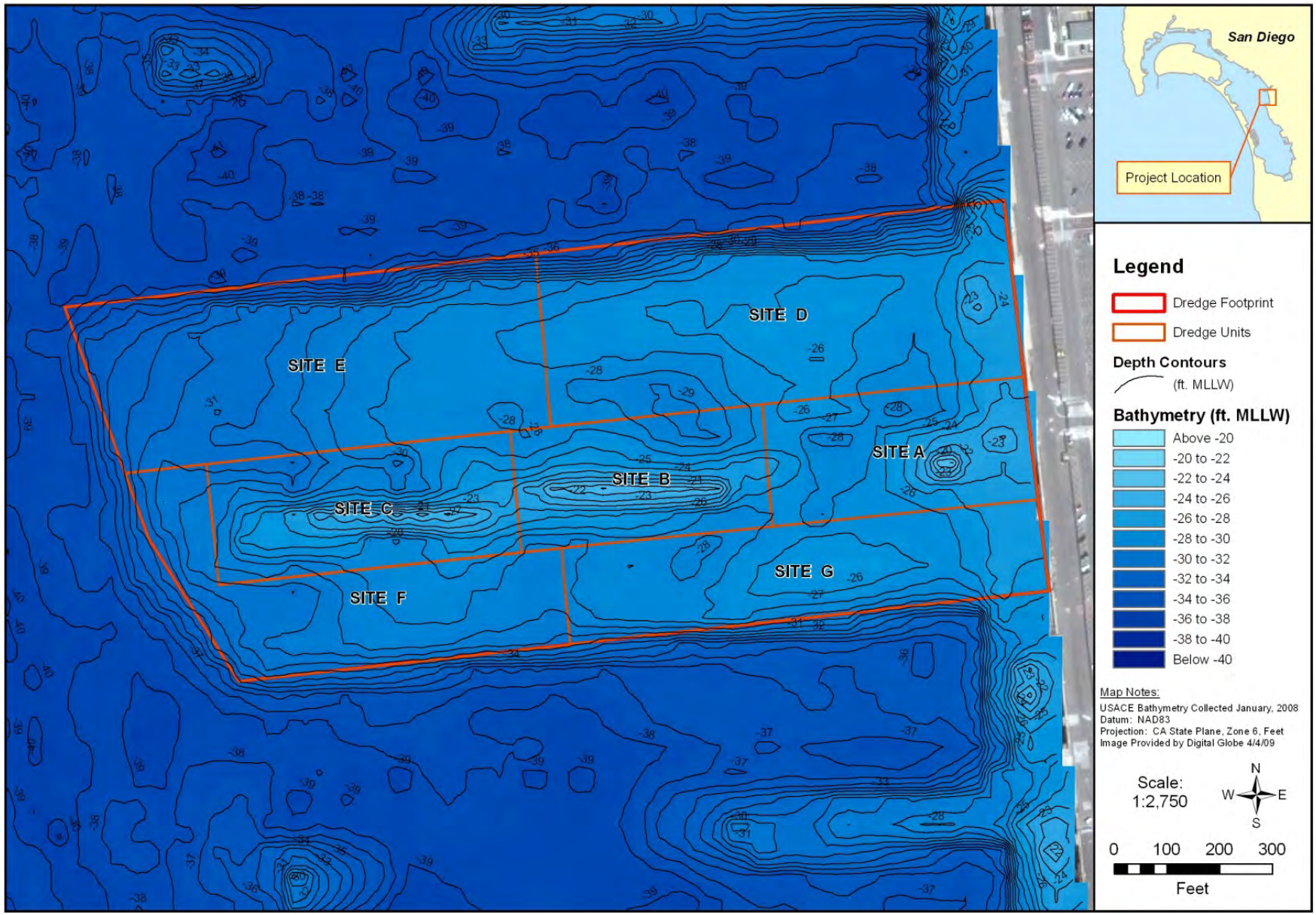

Figure 3.4-2. Bathymetry in the Vicinity of the Pier 12 Project Site.

1

Waves within San Diego Bay typically are wind-generated, and tend to be small (less than 2 to 3 ft [0.6 to 0.9 m]), with short periods (SDUPD 1980). Wave heights in the vicinity of Pier 12 are generally smaller than those in other parts of the Bay (middle and eastern parts) due to the short fetch (distance) associated with predominant winds from the northwest.

3.4.1.4 Marine Water Quality

San Diego Bay can be divided into four hydrodynamic regimes: marine region; thermal region; seasonally hypersaline region; and estuarine region (Largier 1997). The proposed project area is within the seasonally hypersaline region, which extends from Glorietta Bay to the Sweetwater Marsh National Wildlife Refuge, and corresponds to the portions of the Bay where water is seasonally stratified by salinity gradients that are induced by evaporation. Freshwater runoff into San Diego Bay is minimal, except during episodic periods of heavy rainfall, when discharges from the Paleta Creek, Sweetwater and Otay River drainages, and other small urban creeks, storm drains, and surface runoff flow into San Diego Bay.

Water temperatures in the South Bay range from about 63.5° to 76.1° F (Fahrenheit) (17.5° to 24.5° C [Centigrade]) (SDUPD 1980), whereas temperatures near the mouth of San Diego Bay are somewhat lower, ranging from 57° to 75° F (13.9° to 23.9° C) (DoN 1992). Salinity varies from approximately 31 to 36 parts per thousand in the South Bay and from 33 to 35 parts per thousand in the North Bay. Waters in San Diego Bay typically are well mixed, and differences in temperature and salinity conditions with depth are minimal, except near the mouth of San Diego Bay and in areas of the South Bay that are influenced by evaporation and discharges from power plants (San Diego Gas & Electric Company [SDG&E] 1980, cited in DoN 1992).

Dissolved oxygen is the amount (expressed as a concentration) of oxygen present in seawater that is important to the health of biological communities. Dissolved oxygen concentrations within San Diego Bay waters typically range from 5 to 10 milligrams per liter (mg/L). Low oxygen levels in bay waters, similar to conditions that occurred prior to the 1960s when sewage and industrial wastes were discharged to San Diego Bay, do not presently exist near the project area. Depth-related differences in dissolved oxygen concentrations are minimal in the Central Bay (DoN 1995a).

Water clarity typically decreases with distance from the mouth of San Diego Bay (NRaD 1996). Water clarity, as defined by measurements using a Secchi disk, range from 2 to 9 ft (0.6 to 2.7 m) in the South Bay (Lockheed Center for Marine Research 1979a) and correspond to suspended solids concentrations of approximately 12 to 19 mg/L (NRaD 1996). Water clarity (Secchi depths) in the Bay averages 7.8 ft (2.4 m) (DoN 1993). Relatively higher turbidity levels occur within shallow areas of the Bay due to resuspension of bottom sediments. Low, persistent water clarity levels that accompanied historically low dissolved oxygen concentrations do not presently exist in the Central to South Bay. Seasonal decreases in water clarity may accompany stormwater runoff, particularly in the vicinity of storm drains, or plankton blooms (high growth periods). However, these are typically single-event, short-term conditions.

Spatial variations of waterborne contaminants within San Diego Bay are associated with patterns of contaminants associated with bottom sediments (McCain et al. 1992; Zeng et al. 2002). These similarities in spatial distribution suggest that contaminants in the water are derived primarily from sources within the Bay, such as surface water runoff and contaminated

sediments, and not, for example, from the Point Loma sewage discharge near the mouth of the Bay (Flegal and Sañudo-Wilhelmy 1993). Portions of San Diego Bay have been listed as high priority for Total Maximum Daily Loads (TMDL) under the Section 303(d) list of impaired water bodies from the 2002 Clean Water Act. These areas include Mouth of Chollas Creek, Seventh Street Channel (Paleta Creek), Shelter Island Yacht Basin, Switzer Creek, B Street/Broadway Piers, Downtown Anchorage, and Naval Mine and Anti-Submarine Warfare Command. The Shelter Island Yacht Basin Dissolved Copper, Chollas Creek Diazanon, and Chollas Creek Copper, Lead and Zinc Total Maximum Daily Loads are in place, and other Total Maximum Daily Load studies are presently in progress for specific areas and stressors. Also, San Diego Bay marine sediments and waters located within and adjacent to BAE Systems San Diego Ship Repair (formerly called Southwest Marine Inc.) and National Steel and Shipbuilding Company leaseholds, an area collectively referred to as the "Shipyard Sediment Site", is the subject of an ongoing Cleanup and Abatement Order. Shoreline and nearshore areas of San Diego Bay within the project area are not on the current 303(d) list or included in the Shipyard Sediment Cleanup and Abatement Order.

No water quality testing was conducted as part of the sediment testing at Pier 12. Water quality in the vicinity of NBSD may be affected by stormwater runoff from the adjacent Paleta Creek, Chollas Creek, and Sweetwater River. Storm inputs from these creeks are concentrated along the eastern portion of the South Bay, and substantial portions (13 to 15 percent) of the creek/river sediments and associated contaminants are deposited in nearshore areas in the vicinity of NBSD (NRaD 1996).

3.4.1.5 Fish Enhancement Structures

Two FES sites in San Diego Bay (Figure 2.1-1) have been identified based on their location, bathymetry, and potential suitability to support artificial reefs (M. Perdue, personal communication 2007). One of the sites (South Ballast Point) is at the mouth of San Diego Bay and the other site (Le Meridian) is adjacent to the A-4 anchorage off Coronado near an existing reef. The marine habitat for the two FES sites would meet the following criteria: (1) soft bottom substrate comprised mostly of sands and silts; (2) no occurrence of Special Aquatic Sites such as eelgrass or hard substrate that would be directly impacted as a result of placement of the concrete material; and (3) the structures would not be built above -15 ft (-5 m) MLLW. No water or sediment quality testing was conducted at these sites as part of the sediment testing at Pier 12. However, these sites are not near point source discharges or impaired water bodies (i.e., current 303(d) list sites). Therefore, existing water and sediment quality conditions are expected to be comparable to background conditions for San Diego Bay (DoN 2000b).

3.4.1.6 LA-5 Ocean Dredged Material Disposal Site

LA-5 is a designated offshore open-water disposal site located approximately 5.4 nm (10 kilometers) southwest of Point Loma in water depths of 480 to 690 ft (146 to 210 m). The environmental setting of LA-5 is described by USEPA (1988) in an EIS for the site designation process and by the Navy (DoN 1993) in a programmatic EIS for dredged material disposal. Circulation at LA-5 reflects ocean current patterns.

3.4.2 Environmental Consequences

This section discusses the potential adverse and beneficial impacts that would result from the proposed action, including pier demolition, pier construction, dredging, dredged sediment disposal, and FES construction. Environmental consequences of the No-Action Alternative are also evaluated in this section.

3.4.2.1 Proposed Action

The following subsections describe potential impacts to marine sediment quality, hydrology, and marine water quality that would occur under the proposed action.

Marine Sediment Quality

No numerical sediment quality criteria have been established, although state resource agencies are in the process of developing and testing procedures for defining maximum acceptable concentrations for specific contaminants or contaminant classes. Therefore, assessments of project-related impacts to marine sediment quality are based on potentials for creating conditions that would be deleterious to marine organisms.

PIER DEMOLITION

Pier demolition would cause minor disturbances to bottom sediments during removal of existing pilings and anchoring barges and work vessels. The results of recent sediment testing (DoN 2010b) indicated no significant toxicity to aquatic test organisms associated with suspended particulate phase exposures. Based on these results, exposures to marine organisms of disturbed or resuspended sediments associated with pier demolition activities would not cause significant toxicity or contaminant bioaccumulation. Sediments disturbed by pier demolition activities would eventually be removed by dredging. Therefore, no persistent changes to sediment quality would occur as a result of pier demolition.

Prior to demolition, abatement of any existing lead paint and asbestos would be performed by a licensed abatement contractor. Salvageable piping and electrical materials would be removed, loaded into dumpsters, and transported to a local recycler. Debris spills could affect bottom sediments and create nuisance conditions by adding materials that could represent obstructions. However, impacts from accidental spills of demolition or construction debris into the Bay, should it occur, would be minimized. The Navy would require the dredging contractor to prepare and implement a comprehensive debris management plan that addresses types of debris expected, separation and retrieval methods, and disposal methods. Accidental releases of demolition debris to the Bay would be prevented by placing booms around the site. The project would utilize catch devices and sheeting to capture and contain debris and materials that may be generated by the project. Debris generated from work on the barge would also be captured on-board the barge. All captured material would be swept and disposed of properly. Thus, pier demolition activities would not adversely affect sediment quality at the project site. Therefore, no significant impacts on sediment quality from pier demolition would occur.

DREDGING

Dredging would remove the surface sediment layer from areas under and around Pier 12 to a project depth of -37 ft MLLW with a 2 ft overdredge allowance. The newly-exposed surface

layer would consist of historically-deposited sediments, including the Bay Point Formation that occurs in some portions of the dredging footprint, but which do not contain significant concentrations of contaminants (DoN 2010b). By removing the more recently-deposited sediment layer, dredging would reduce the mass of sediment contaminants within the project area. This would have a net beneficial impact on sediment quality.

Dredging could also result in a substantial change in sediment texture in the immediate project area. This change would reflect the removal of finer-grained materials in the upper sediment layers, thus exposing the coarser-grained consolidated sediments in the Bay Point Formation. Alterations in sediment texture would affect types of bottom-dwelling organisms that would recolonize the site (see Section 3.5). Historically-deposited sediments do not contain chemical contaminants, as demonstrated by the results of chemical testing of the lower sediment layer in Area C (DoN 2010b). Therefore, the newly-exposed sediments would not cause significant toxicity or bioaccumulation of contaminants in aquatic organisms. Subsequent deposition of finer-grained sediments, similar to those present in the existing surface layers at the dredge sites, would probably occur because the hydrographic conditions (i.e., current patterns) at the site would not be altered by the proposed action. Therefore, the types of sediments deposited at the site in the future would not be substantially different from sediments currently deposited at the site.

A relatively small amount of the sediments dredged from the areas around Pier 12 could be spilled during dredging and/or transfer to the LA-5 disposal site or offloading to the CDF site. All dredging projects generate residuals, which refers to the sediments found on the post-dredging surface, either within or adjacent to the dredging footprint (USACE 2008). Spilled or residual sediments likely would redeposit on the bay floor in the vicinity of the dredge site and eventually mix with other, recently-deposited materials. However, based on the results of recent sediment testing (DoN 2010b) residuals would not represent a significant risk for acute toxicity and contaminant bioaccumulation. Thus, small spills of sediments during dredging would not affect sediment quality within the project area.

All dredged material disposal operations performed for the proposed project would comply with Clean Water Act Section 404(b)(1) Guidelines (40 CFR 230) and with specific requirements of a dredging permit issued by the USACE. During dredging and construction of the new pier, the Navy would require the construction contractor to develop and implement engineering controls and procedures that would ensure that the water tight integrity of the quaywall is maintained, and that hazardous materials from IR Site 1, Basin 4 contained by the quaywall are not released into the Bay. As discussed in Chapter 2, as a precautionary measure the Navy would implement a monitoring system to detect any releases from Basin 4 and support evaluations and implementation of response actions. Therefore, no significant impacts on sediment quality from dredging activities would occur.

PIER CONSTRUCTION

Construction of a new pier would require installation of new pier pilings, which would result in some localized disturbances of bottom sediments. However, based on the results of sediment testing (DoN 2010b), minor disturbances of these sediments would not cause significant acute toxicity or contaminant bioaccumulation. Therefore, no significant impacts on sediment quality from construction of a new pier would occur.

CONSTRUCTION OF FISH ENHANCEMENT STRUCTURES

Placement of the FES would change the substrate type from soft bottom (bay mud) to hard concrete reef within the bottom footprint of the structures (approximately 0.2 hectares for the two structures combined). Placement of concrete debris on the bottom would not alter the quality of adjacent soft sediments or negatively affect other beneficial uses within the vicinity of the structures.

Bathymetry and Circulation

PIER DEMOLITION

Demolition of Pier 12 would not substantially alter water circulation. Removal of pilings (both structural and fender pilings) would slightly and temporarily increase water circulation in the immediate vicinity of the existing pier relative to present conditions, but this would not degrade water quality or affect biological resources. Therefore, no significant impacts on bathymetry and circulation from pier demolition would occur.

DREDGING

The proposed action would require dredging of 479,125 cy (366,317 cubic meters) of bottom sediments based on estimates from Fugro Pelagos (dated 10 November 2010). Dredging would increase the present water depths to 37 ft (11.3 m) below MLLW in the vicinity of the Pier 12. The deeper water depths in the vicinity of Pier 12 would be consistent with present depths at the adjacent piers (10/11 and 13). Some minor, localized changes in circulation (current conditions) could result from changes in bottom depths. However, these would not restrict water exchange or mixing within the project area to an extent that could cause persistent adverse impacts on water quality or biological resources. Therefore, no significant impacts on bathymetry and circulation from dredging activities would occur.

PIER CONSTRUCTION

Construction of a new pier would require installation of 700 structural and 400 fender pilings. The pilings would slow water circulation in the immediate area of the new pier, but would not restrict water exchange to an extent that results in stagnation or causes persistent adverse impacts on water quality or biological resources, or represent any appreciable differences from existing conditions. Thus, construction of a new pier would not alter circulation to an extent that would cause persistent adverse effects on water or sediment quality. Therefore, no significant impacts on bathymetry and circulation from pier construction would occur.

FISH ENHANCEMENT STRUCTURES

Construction of FES would require placement of concrete sections into the form of reef mounds with estimated volumes of 8,500 cy and 4,900 cy (Chapter 2). The tops of the structures would not be shallower than -15 ft (-5 m) MLLW. The structures would reduce the bathymetry within small areas, but this would not affect water circulation patterns. Therefore, no significant impacts on bathymetry and circulation from placement of the FES would occur.

Marine Water Quality

Activities associated with pier replacement, including demolition, dredging, and construction, would likely disturb and resuspend a portion of the bottom sediments within the project area. Disturbances of bottom sediments may cause the following impacts on marine water quality:

- Formation of localized but temporary turbidity plumes with elevated concentrations of suspended particles and decreased light transmittance;
- Localized but temporary decreases in dissolved oxygen concentrations in bottom waters; and
- Localized and temporary increases in contaminant concentrations in the water column.

These effects would be localized and temporary because a silt curtain would be used at the project site during in-water construction in areas where there is a potential for turbidity and suspended sediments eventually would settle from the water to the bottom. The extent of these potential changes cannot be determined quantitatively because they would depend on unpredictable variables such as the specific amount and characteristics of sediments affected and the strength and directions of local currents that would transport and disperse suspended particles. Additional details are provided below for specific project activities.

PIER DEMOLITION

Demolition of the existing piers would require removing pier pilings, which would result in temporary and localized resuspension of bottom sediments. Pier demolition would also generate construction debris that would be transferred to barges for offloading at NBSD for upland disposal or recycling. Debris management and construction demolition plans would be implemented as part of the project to minimize potentials for water quality impacts. Construction specifications would require contractors to guard against debris spills and remove any debris falling into the Bay. The construction contractor would minimize impacts from accidental releases of demolition debris to the Bay by deploying a boom and silt curtain in areas where there is a potential for turbidity. If a creosote sheen occurs during removal of existing, treated pier pilings, the NBSD Port Operations Office would be notified and appropriate controls would be implemented. Due to the temporary duration and localized extent of resuspension events, no significant impact on marine water quality would occur from pier demolition.

DREDGING

Dredging and disposal operations would be governed by permits issued by the RWQCB and USACE. Permits are expected to include the following requirements and limits: (1) a debris management plan that would prohibit debris releases; (2) permit specifications and other requirements of USACE and RWQCB that may include numerical water quality limits and/or use of procedures to minimize losses or spillage to adjacent waters; (3) prohibition of barge overflow during sediment transport; (4) a requirement that barges transporting dredged material monitor draft depths to verify that wastes are not leaking during transport; and (5) a requirement that barges use precision navigation tools to document that ocean disposal occurs within the boundaries of the ocean disposal site.

Dredging operations would resuspend bottom sediments and generate localized and temporary turbidity plumes. Increased suspended sediment concentrations would also result in reduced light transmittance and increased oxygen demand, the latter leading to reduced dissolved oxygen concentrations. Dispersion of suspended sediments from the dredging site would be limited by a silt curtain deployed in areas where there is a potential for turbidity. The specific suspended and settleable solids concentrations, and associated turbidity levels that would result from dredging cannot be determined quantitatively because they would vary depending on sediment grain size, current speeds, and the types of activities responsible for disturbances of bottom sediments. Solids concentrations and turbidity levels at the dredging site would decrease to background levels within a period of several hours after dredging activities stop due to particle settling, mixing, and dilution. Specific criteria for turbidity levels, suspended solids concentrations, and other chemical constituents would be defined in the water quality permit issued for the dredging operations. The receiving water criterion for turbidity is likely to be defined as light transmittance levels that cannot be less than 80 percent of ambient levels at a point (e.g., 300 m) down current from the dredge.

Similarly, dredging operations would not cause persistent changes in dissolved oxygen concentrations or in other water quality parameters because natural mixing processes promote dispersion of suspended particles and mixing with oxygenated water from adjacent areas. Therefore, localized changes to water quality would not persist for periods greater than several hours after dredging stops.

Sediments from the vicinity of Pier 12 contain proportions of sand-sized materials ranging from 32 to 64 percent (DoN 2010b). In general, sand-sized particles typically contain low concentrations of chemical contaminants with minor potentials for contaminant solubilization or adverse biological effects. Rapid settling of sand-sized particles limits water quality impacts to the immediate vicinity of the dredge. In contrast, fine-grained sediments typically contain proportionately higher contaminant concentrations (NRaD 1996), and remain suspended for a relatively longer time because of the lower settling rates. Thus, finer particles would be subject to transport by currents to other locations within the Bay. Regardless, dredging may release some metals from sediments to surrounding waters, causing temporary and localized increases in dissolved metal concentrations in bay waters. Elevated metal concentrations are not expected to persist because mixing and scavenging (i.e., adsorption) of metals by suspended particles are expected to reduce levels. Regardless, based on the results from suspended particulate phase toxicity tests conducted on the proposed dredged sediments in 2010 (DoN 2010b), these temporary changes in water quality would not lead to significant toxicity in aquatic organisms.

Therefore, no significant impacts on marine water quality from dredging activities would occur.

PIER CONSTRUCTION

Pile installations would occur over approximately 100 to 120 working days during a 5- to 6-month period (see Appendix A). Piling installation is likely to resuspend small amounts of bottom sediments. Increased suspended sediment concentrations would also result in reduced light transmittance. The specific suspended and settleable solids concentrations, and associated turbidity levels, that would result from pile driving and other pier replacement activities cannot be predicted accurately because they would vary depending on sediment grain

size, current speeds, and the types of activities responsible for disturbances of bottom sediments.

A silt curtain would limit the dispersion of suspended sediments. Solids concentrations and turbidity levels at the construction site would decrease to background levels within a period of several hours after construction activities stop due to particle settling, mixing, and dilution. Although these effects would occur sporadically during installation of pilings, these changes to marine water quality would be temporary and localized because the operations would be discontinuous, and they would not cause toxicity to aquatic organisms or increase potentials for contaminant bioaccumulation.

Similarly, pier construction operations would not cause persistent changes in dissolved oxygen concentrations or in other water quality parameters because natural mixing processes promote dispersion of suspended particles and mixing with oxygenated water from adjacent areas. Localized changes in water quality would not persist for periods greater than several hours after pier installation activities stop.

Therefore, no significant impacts on marine water quality from pier construction would occur.

Based on the assessment of the stability of the quaywall at IR Site 1, Basin 4, dredging and construction of a new pier for the proposed project is not expected to cause contaminant releases to the Bay (DoN 2009). However, as discussed previously, the Navy would conduct monitoring to ensure the structural integrity of the quaywall, and water quality in the immediate vicinity of the Basin 4 quaywall, are not affected during construction.

FISH ENHANCEMENT STRUCTURES

Concrete debris used to construct the FES would be placed on the seafloor using a barge crane. Placement of the FES structures would cause minimal disturbances of bottom sediments but result in turbidity plumes and suspended sediments in the immediate vicinity of the site. Suspended sediments would settle to the bottom and turbidity levels would decrease to background levels within a period of hours. Therefore, no significant impacts on marine water quality from construction of fish enhancement structures would occur.

Mitigation Measures

Because no significant impacts would occur, no mitigation measures are proposed.

3.4.2.2 No-Action Alternative

Under the No-Action Alternative, pier demolition, dredging, and dredged material disposal, pier construction, and FES construction would not occur. Therefore, no impacts would occur. Potential adverse effects on sediment quality from the disturbance of sediment contaminants, on the bathymetry and circulation patterns of the project area, and on water quality from turbidity and disturbance of sediment contaminants that could occur as result of the proposed action would not occur as a result of the No-Action Alternative.

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3.5 MARINE BIOLOGICAL RESOURCES

3.5.1 Affected Environment

This section is divided into subsections that address: (1) marine habitats, plants, and invertebrates, (2) fish, (3) marine birds, and (4) marine mammals and sea turtles that occur or may occur in the vicinity of the project site and the FES sites. Each subsection also discusses the occurrence of any sensitive (threatened and endangered, or otherwise protected) species in the project vicinity.

3.5.1.1 Marine Habitats, Plants, and Invertebrates

Pier 12

HABITATS

San Diego Bay is characterized by a wide range of marine habitats including soft-bottom, which predominates in the Bay, eelgrass, and artificial hard substrates primarily associated with piers and jetties (DoN 2000b). These habitats represent important breeding, nursery, and feeding areas for hundreds of fish, invertebrate, and bird species and their respective prey species (Science Applications International Corporation [SAIC] 1998; DoN 2000b). San Diego Bay consists of 10,532 acres (4,262 hectares [ha]) of water and 4,419 acres (1,788 ha) of tidelands (DoN 2007d). The marine habitat in the vicinity of Pier 12 comprises primarily soft bottom subtidal habitat with water depths of approximately 20-30 ft (6.0-9.1 m) MLLW (Figure 3.4-2).

PLANTS

Two species of flowering plants, eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*), occur throughout the Bay (DoN 2000b), although neither species occurs at the Pier 12 project site (Figure 3.5-1; DoN 2000b). San Diego Bay contains extensive shallow water eelgrass habitat that supports a unique assemblage of juvenile and adult fishes (VRG 2009). Eelgrass habitat provides important nursery areas for fish and invertebrates that produce forage for the California least tern and other marine birds. Furthermore, these sites are noted for overall higher diversity compared to unvegetated bottom habitat (Hoffman 1986). Results of recent eelgrass habitat mapping of San Diego Bay showed that approximately 11 percent of the Bay (about 1,319 acres [534 hectares] out of 12,100 acres [4,897 hectares]) is vegetated with eelgrass (Figure 3.5-1).

Many soft bottom habitats throughout San Diego Bay are covered with mats of various algal species. However densities typically are reduced due to lower light levels at bottom depths greater than about 20 ft (7 m), such as occur near most pier areas, including the Pier 12 project area (DoN 2000b). Some shallower areas of NBSD contain masses of red algae such as *Gracilaria verrucosa* (DoN 1993) and Sargasso seaweed (*Sargassum muticum*) (DoN 1995a). Other species, including *Ulva* spp., *Chaetomorpha* spp., *Cladophora* spp., and *Enteromorpha* spp., are components of the mat communities in some nearshore locations in San Diego Bay (SDUPD 1990). Densities of these species are relatively low compared to many areas of the Bay that are shallower and/or characterized by lower incidences of disturbance from boat traffic. Similar red, green, and brown algal species are expected to be typical of existing pier pilings. *Caulerpa*, an invasive species of algae that is known to cause significant habitat disruption in areas where it occurs (nearest record is from northern San Diego County), has not been documented from San Diego Bay (SDUPD 2007).

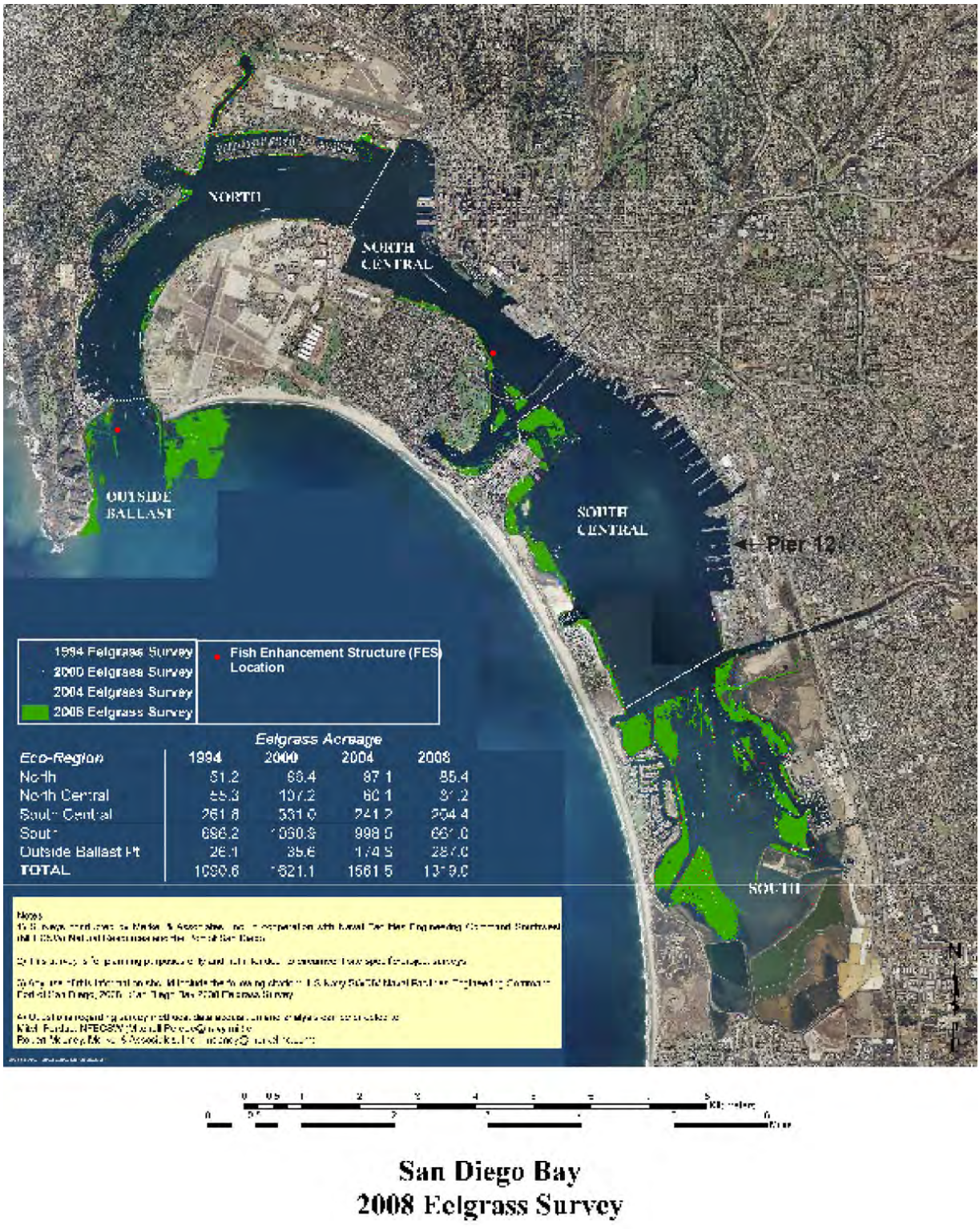


Figure 3.5-1. San Diego Bay 2008 Eelgrass Distribution by Eco-Region. Fish Enhancement Structures (FES) are represented by red squares and the Pier 12 project area is shown.

INVERTEBRATES

The infaunal community in the vicinity of Pier 12 is expected to be very similar to infauna documented in 1994 by SAIC near Paleta Creek (SAIC 1995) and in 1999 near Pier 13 (Merkel and Associates 1999). This conclusion is based on the general proximity of these locations to the project area. Although this is not the most productive habitat in San Diego Bay, it represents a unique infaunal community comprising 134 benthic species representing nine phyla (Merkel and Associates 1999). Common infaunal and epifaunal invertebrates collected in the vicinity of NBSD and other parts of the Bay are listed in Table 3.5-1. The infaunal community is dominated by polychaete (capitellids, spionids, and syllids) and oligochaete worms. Crustaceans (amphipods) were second in overall abundance, followed by molluscs and miscellaneous species (sponges, cnidarians, platyhelminthes, nemerteans, sipunculids, phoronids, echinoderms, and urochordates). The polychaetes *Mediomastus californienesis* and *Exogene louri* have some of the highest mean abundances in the vicinity (16,090 ± 751 individuals/m^2 and 8,000 ± 434 individuals/m^2, respectively). These species and common polychaete families (and genera) including Opheliidae (*Armandia*), Cirratulidae, Phyllodocidae (*Eteone*), Sabellidae (*Fabricia*), Syllidae (*Exogone*), Glyceridae (*Glycera*), Lumbrineridae (*Lumbrineris*), Eunicidae (*Marphysa*), Neriidae (*Neanthes*) are typical of soft bottom habitats of San Diego Bay (e.g., documented by Ford and Chambers 1974, Lockheed Environmental Sciences 1981, and SDUPD 1990).

Crustacean species of greatest abundance include *Acuminodeutopus heteruropus*, *Rudilemboides stenopropodus*, and *Parasterope barnesi*. Predominant molluscs include *Musculista senhousii* and *Exogene louri*. Shannon-Weiner diversity (H') averaged 2.40, while evenness (J') had a mean of 0.77. These results are similar to other studies in the same general region (Ford and Chambers 1974; Lockheed Environmental Sciences 1981; SDUPD 1990). Biomass results from infaunal sampling near Pier 12 (Paleta Creek; SAIC 1995) showed a predominance of molluscs, with a mean of 61.5 grams per square meter (g/m^2). Similar results were obtained by Merkel and Associates (1999) at Pier 13, with sponges (Porifera) attached to pilings and mollusks having the highest biomass values.

The soft–bottom epifaunal community at Pier 10/11, immediately adjacent to Pier 12, was investigated by divers in April 1994 and using trawls in April/May and September/October 1994 (SAIC 1995). These surveys, together with previous studies by Ford and Chambers (1974), Lockheed Environmental Sciences (1981), Ford (1986), and SDUPD (1990), serve to characterize the common epifauna within San Diego Bay (including the Pier 12 region). Epifauna in the project region is dominated by a bryozoan (*Zoobotryon*) and a brick red basket sponge (SAIC 1995). Other common epifauna includes a tunicate (*Styela clava*), the introduced Japanese mussel (*Musculista senhousii*), and the California bubble snail (*Bulla gouldiana*). These species are common in both San Diego and Mission Bays and in other areas to the north in San Diego County, such as Agua Hedionda Lagoon.

Epifaunal communities within San Diego Bay are generally sparse in abundance, with the most common taxonomic groups (sponges, tunicates, coelenterates, crustaceans, molluscs, and echinoderms) being typical of most soft bottom, including the Pier 12 region (Ford and Chambers 1974; Lockheed Environmental Sciences 1981; SDUPD 1990; SAIC 1995). Hard-bottom epifaunal communities on existing pilings and quaywall structures are expected to be typical of other man-made structures in San Diego Bay, and include barnacles, mussels,

tunicates, bryozoans, and coelenterates (e.g., Table 3.5-1). Encrusting invertebrates on pilings at Pier 13 were dominated by sponges in all areas and at all depths (Merkel and Associates 1999). Rock jingles scallops, foliose bryozoans, and stalked tunicates were abundant on exposed areas of piles and nearly absent or decreased in numbers on shaded (dark) piles. Small mobile invertebrates, including nemertean worms, amphipods, shrimp, decorator crabs, and gastropods were observed on piles over all light regimes.

Table 3.5-1. Common Infaunal and Epifaunal Invertebrates Collected within San Diego Bay.

Scientific Name	*Common Name*
Amphipholis cf. *pugetana*	Brittlestar
Armandia bioculata	Polychaete worm
**Balanus amphitrite*	Barnacle
Bulla gouldiana	Bubble snail
Capitella capitata	Polychaete worm
**Chthamalus* spp.	Barnacle
Cirriformia spirabranchiata	Polychaete worm
**Crassostrea gigas*	Japanese oyster
Cylinchnella inculta	Acteocinid tectibranch
Eteone cf. *lighti*	Polychaete worm
Euphilomedes carcharodonta	Ostracod
Exogone lourei	Polychaete worm
Fabricinuda limnicola	Polychaete worm
Glycera cf. *americana*	Polychaete worm
Leitoscoloplos elongatus	Polychaete worm
Leptochelia cf. *dubia*	Tanaid crustacean
Lumbrineris spp.	Polychaete worm
Marphysa sanguinea	Polychaete worm
Mayerella banksia	Gammarid amphipod
Mediomastus californiensis	Polychaete worm
Musculista senhousii	Japanese mussel
**Mytilus edulis*	Mussel
Neanthes acuminata	Polychaete worm
Pherusa cf. *neopapillata*	Polychaete worm
Phoronida sp.	Phoronid
Prionospio cf. *heterobranchiata*	Polychaete worm
Rutiderma judayi	Ostracod
Scoletoma tetraura	Polychaete worm
Streblospio benidicti	Polychaete worm
**Styela clava*	Tunicate
**Styela montereyensis*	Tunicate
Zoobotryon verticillatum	Bryozoan

Notes:

*Indicates epifaunal taxa primarily occurring on hard substrate, including pilings and other manmade structures.

Sources: SAIC 1995; Fairey et al. 1996; and Exponent 2003.

Fish Enhancement Structure Sites

MARINE HABITATS, PLANTS, AND INVERTEBRATES

The locations of the FES sites are shown in Figure 3.5-1, and represent soft-bottom habitats with bottom depths of about 30-35 ft (9.1-10.6 m) MLLW. To be considered for enhancement, the marine habitat for the proposed FES sites would meet the following criteria: (1) soft bottom substrate comprised mostly of sands and silts; (2) no occurrence of Special Aquatic Sites such as eelgrass or hard substrate that would be directly impacted as a result of placement of the concrete material; and (3) the structures would not be built above -15 ft (-5 m) MLLW. No eelgrass occurs at these sites (Figure 3.5-1) and densities of common algal species are expected to be low due to lower light levels at bottom depths greater than about 20 ft (7 m). Invertebrate communities in these soft bottom habitats also are expected to be similar to other areas of San Diego Bay as described for the Pier 12 site and as additionally described by DoN (2007c).

3.5.1.2 Fish

Pier 12

Fish communities in the South Central Eco-Region of San Diego Bay (Figure 3.5-1), the region corresponding most closely to the Pier 12 project area, have recently been described by SAIC 1995, Allen et al. (2002), and Vantuna Research Group (VRG 2009). Common demersal and pelagic fish species collected in these areas are listed in Table 3.5-2.

A total of 710 fishes belonging to 8 species and weighing 5.2 kg were collected in the South-Central Ecoregion during June 2009 (VRG 2009). The most common species included slough anchovy (*Anchoa delicatissima)*, and shiner perch (*Cymatogaster aggregata*). Biomass was highest for spotted sand bass (*Paralabrax maculatofasciatus*), round stingray (*Urolophus halleri*), and slough anchovy.

A total of 14 fish species were collected with a beam trawl during previous surveys in the vicinity of Pier 12 area (SAIC 1995). All 2.5-inch (1.0 cm) lined-trawls were dominated by round stingrays and spotted sand bass, while shiner surfperch dominated smaller (0.1-inch [0.25 cm]) lined-trawls. The highest diversity (H') and evenness values (J') were noted from eelgrass habitats, while mud and sand habitats had the lowest values. Species diversity tended to be higher, and biomass lower, when the smaller mesh size was used.

Similar to results from the SAIC (1995) beam trawl surveys, Allen et al (2002) and VRG (2005, 2009) surveys resulted in fish catches in San Diego Bay that were dominated by demersal fish species, such as specklefin midshipman (*Porichthys myriaster*), barred sandbass (*Paralabrax nebulifer*), arrow goby (*Clevelandia ios*), and California halibut (*Paralichthys californicus*). Specklefin and plainfin midshipman (*Porichthys myriaster* and *P. notatus*, respectively) also were dominant in terms of biomass from the WESTEC (1986) study. Dominant pelagic fish species in the project area likely include deepbody anchovy and topsmelt (SDUPD 1990). All of these species, including pier-associated fish are common and typical of most other areas of San Diego Bay.

Table 3.5-2. Common Pelagic and Demersal Fish Species Collected Using Gill Nets, Seines, and Otter Trawls in the South-Central, North Central, and North Eco-Regions of San Diego Bay.

Common Name	*Scientific Name*	*Distribution*	
		Pelagic	*Demersal*
Yellowfin goby	*Acanthogobius flavimanus*		NC, SC
Deepbody anchovy	*Anchoa compressa*	ALL	
Slough anchovy	*Anchoa delicatissima*	ALL	
Topsmelt	*Atherinops affinis*	ALL	
Jacksmelt	*Atherinopsis californiensis*	ALL	
Northern anchovy	***Engraulis mordax***	**ALL**	
Black croaker	*Cheilotrema saturnum*	ALL	
Arrow goby	*Clevelandia ios*		ALL
Shiner surfperch	*Cymatogaster aggregata*		ALL
California killifish	*Fundulus parvipinnis*	NC, SC	NC, SC
California butterfly ray	*Gymnura marmorata*		N
Horn shark	*Heterodontus francisci*		NC
Giant kelpfish	*Heterostichus rostratus*		ALL
Bay blenny	*Hypsoblennius gentilis*		ALL
Diamond turbot	*Hypsopsetta guttulata*		ALL
Cheekspot goby	*Ilypnus gilberti*		ALL
Staghorn sculpin	*Leptocottus armatus*		ALL
Striped mullet	*Mugil cephalus*		ALL
Gray smoothhound	*Mustelus californicus*		ALL
Spotted sandbass	*Paralabrax maculatofasciatus*		ALL
Barred sandbass	*Paralabrax nebulifer*		ALL
California halibut	*Paralichthys californicus*		ALL
English sole	***Pleuronichthys vetulus***		**ALL**
Specklefin midshipman	*Porichthys myriaster*		ALL
Plainfin midshipman	*Porichthys notatus*		N
Shadow goby	*Quietula y-cauda*		ALL
Pacific sardine	***Sardinops sagax caeruleus***	**ALL**	
Queenfish	*Seriphus politus*	N, NC	N, NC
California needlefish	*Strongylura exilis*	ALL	
Pipefish	*Syngnathus spp.*		ALL
Leopard shark	***Triakis semifasciata***	**ALL**	**ALL**
Yellowfin croaker	*Umbrina roncador*	ALL	ALL
Round stingray	*Urobatus halleri*		ALL

Note:
Species in **bold** represent Essential Fish Habitat (EFH) species known to occur in San Diego Bay.

Sources:
SAIC 1995; Allen et al. (2002); VRG (2005, 2009). ALL designates distribution throughout all Eco-Regions; N = North, NC = North Central, and SC = South Central per Allen et al. (2002). FES locations include South Ballast Point and Zuniga Fingers (outside San Diego Bay Eco-Regions), NEMS-5 Units 1-3 in the North Eco-Region, and Le Meridian in the North Central Eco-Region.

Surveys of Pier 13 piling fish communities (Merkel and Associates 1999) found winter (January) fish abundances and diversity were low, with black croaker (*Cheilotrema saturnum*), spotted sand bass, round stingray, and California scorpionfish (*Scorpaena guttata*) being the dominant species observed. In contrast, summer (July) surveys found slightly higher abundances. For example, small schools of topsmelt were observed along the exposed faces of the pier. Barred sand bass, kelp bass, and spotted sand bass were also commonly observed along transects at Pier 13, as were numerous juvenile giant kelp fish and black croaker (Merkel and Associates

1999). Other species of fish observed included opaleye (*Girella nigricans*), sargo (*Anisotremus davidsonii*), and three unknown fish observed along the bottom in the project region. The habitat at the Pier 12 site comprises deep water (-35 ft [-10.6 m] MLLW), non-vegetated soft bottom habitat that is typical of wharfs and harbor settings. A wharf study conducted in 1999 at the site of the former Pier 14 at NBSD by Merkel and Hoffman (Merkel and Associates 1999) identified 12 fish species including small schools of topsmelt, schools of blacksmith, and barred sand bass and black croaker that were well represented along transects.

ESSENTIAL FISH HABITAT ASSESSMENT

The project region is located within a general area designated as Essential Fish Habitat (EFH) by two Fishery Management Plans (FMP), the Pacific Coast Groundfish (Pacific Fishery Management Council [PFMC] 2008) and Coastal Pelagic Species (PFMC 2006). The species covered by these plans are considered in this assessment, but salmonids (covered by a third plan) do not occur in the project region and, consequently, are not addressed for this EA. The formal Magnuson-Stevens Act EFH analysis is included as Appendix E.

Although the Pacific Coast Groundfish Fishery Management Plan manages 89 species over a large, ecologically diverse area (PFMC 2008), only two species, the leopard shark (*Triakis semifasciata*) and English sole (*Pleuronichthys vetulus*), likely occurs in the project region (Table 3.5-2). The Fishery Management Plan for Coastal Pelagic Species includes five species (four finfish and one invertebrate), including northern anchovy (*Engraulis mordax*), jack mackerel (*Trachurus symmetricus*), Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), and market squid (*Loligo opalescens*) (PFMC 2006). However, only two of these species, northern anchovy and Pacific sardine, occur in the project region. These species are highly transient and can be found throughout San Diego Bay (Allen et al. 2002).

Merkel and Associates (2010) characterized EFH in San Diego Bay, including large pier and wharf locations similar to those at the project site. This study concluded that higher biomass, abundance, and species richness are associated with some structures (either natural or artificial) as these habitat elements provide a three dimensional structured environment, substrate for macroalgae and invertebrates, and forage and cover for fish species. However, some larger structures, such as large piers or wharves, experience reduced circulation and light levels that affect community composition. While large numbers of fish may be found beneath pier structures, and biomass may exceed that of open waters due to fish size, species richness generally is depressed below that observed in open water environments. Fish abundance and biomass also may be reduced in waters beneath the interior portions of piers.

Fish Enhancement Structure Sites

Characteristic fish species and EFH species from the eco-regions represented by the FES sites are listed in Table 3.5-2 and are typical of species occurring throughout most of San Diego Bay. The habitats at these sites range from about -35 ft (10.6 m) to -15 ft (4.5 m) MLLW in non-vegetated soft bottom substrates. All proposed FES locations are geographically distinct from existing Special Aquatic Sites (Section 3.5.2).

Pondella and Allen (2003) conducted studies of fish utilization of artificial reef structures in San Diego Bay from 1997 to 2002. They noted that fish utilized the concrete reef structures and densities of adult and young-of-the-year increased over time. Significant correlations between age classes of barred sand bass indicated that these artificial reef structures were capable of enhancing fishery stocks in San Diego Bay.

3.5.1.3 Marine Birds

Several studies conducted by the Point Reyes Bird Observatory (Page et al. 1992), SDUPD (1990), U.S. Fish and Wildlife Service (USFWS) (e.g., Fancher 1992; Manning 1993; Stadtlander 1994), and the Navy (DoN 1994, 1995c) have established some spatial and temporal patterns for marine bird use of San Diego Bay, and critical nesting, roosting, and foraging areas for particular species. In addition, the Navy has almost completed a comprehensive waterbird survey of San Diego Bay (T. Conkle, personal communication 2007; M. Perdue, personal communication 2007).

San Diego Bay is part of a major bird migratory pathway, the Pacific Flyway, and supports large populations of over-wintering birds traveling between northern breeding grounds and southern wintering sites (DoN 2000b). Over 300 migratory and resident bird species have been documented to use San Diego Bay (DoN 2000), including shore birds, gulls, and other waterfowl. The most common bird species in San Diego Bay include surf scoter (*Melanitta perspicillata)*, scaup species (*Aythya* spp.), bufflehead (*Bucephala albeola*), eared grebe (*Podiceps nigricollis*), Forster's tern (*Sterna forsteri*), California brown pelican (*Pelecanus occidentalis californicus*), elegant tern (*Sterna elegans*), Heermann's gull (*Larus heermanni*), California least tern (*Sterna antillarum browni*), double-crested cormorant (*Phalacrocorax auritus*), mallard (*Anas platyrhynchos*), and great blue heron (*Ardea herodias*). Several species, as noted below, are considered sensitive by the United States Fish and Wildlife Service or California Department of Fish and Game. All marine birds that occur in San Diego Bay are protected under the Migratory Bird Treaty Act and Executive Order 13186, which directs federal agencies to avoid or minimize negative effects on migratory birds, protect their habitats, and consider effects on migratory birds in NEPA documents.

The Pier 12 project area and FES project sites are located in various eco-regions from South-Central to North San Diego Bay and Outside Ballast (Figure 3.5-1). The general project region, including the FES sites and proximal man-made structures and open water habitat offshore of the project region, receives consistent use by foraging and resting birds. The San Diego Bay Integrated Natural Resources Management Plan indicates the project area as having a low to medium relative abundance and species diversity for marine and shore birds (DoN 2000b).

Federally Listed Threatened and Endangered Bird Species

Table 3.5-3 lists bird species that are federally listed as threatened or endangered marine and shorebird species known to occur, or having the potential to occur, in or around the project region. Of these, based on the presence of suitable habitat or historic records, two species are known or have the potential to occur in the project region (western snowy plover and California least tern), and are described in additional detail below.

The light-footed clapper rail, a species federally listed as endangered, occurs in the Sweetwater Marsh area of San Diego Bay. However, because no suitable habitat exists in the vicinity of the

Pier 12 and the FES sites this species is not evaluated further. Several other sensitive marine bird species having state or other federal designations are present within San Diego Bay, as listed in the San Diego Bay Integrated Natural Resources Management Plan (DoN 2000b). However, based on the lack of suitable habitat in the highly industrialized vicinity of the proposed project, including areas proximal to the FES sites, these species are unlikely to be present and are not addressed further in this EA.

Table 3.5-3. Federally Threatened and Endangered Bird Species Known to Occur or Having the Potential to Occur in the Project Region.

Species	*Status*	*Habitat*	*Occurrence*
		BIRDS	
Light-footed clapper rail *Rallus longirostris levipes*	FE, SE	Resident of cordgrass-dominated salt marsh habitats.	Nests at Sweetwater Marsh; observed on the mudflat at South Delta Beach. No habitat for this species in the project region.
California least tern *Sterna antillarum browni*	FE, SE, FSC,	Bays, estuaries, lagoons, shoreline. Resident. Localized breeding.	Locally common summer resident and migrant, feeding in bay and ocean waters. Nesting locations in open habitats with sandy substratum around San Diego Bay on dunes and flats, partially developed shoreline areas; largest nesting colonies are on NAB Coronado at ocean side beaches and North and South Delta Beach; other nearby nesting areas include D Street Fill (Sweetwater Marsh); high use foraging areas include Fiddler's Cove and other bay-side waters along the Silver Strand (Unitt 1984; DoN 1993; DoN 1995b; Copper and Patton 1998; DoN 2002, 2006d). Foraging habitat is present off shore NBSD and in the FES areas.
Western snowy plover *Charadrius alexandrinus nivosus*	FT, CSC	Sandy beaches, lagoon margins, tidal mud flats. Migrant and winter resident. Localized breeding.	Inhabits sandy beaches; spring-summer breeding resident, also occurs as a migrant and winter resident; several nesting locations around San Diego Bay including NAB Coronado at ocean side beaches, South and North Delta Beaches (historical, no individuals were identified at South Delta Beach in 2006), NRRF, and on D Street Fill at Sweetwater River mouth. No suitable habitat occurs in the vicinity of Pier 12 or proximal to the FES sites, which would be sub-tidal.

Notes:
1. Modified from DoN 2002.
2. FSC = Federal Species of Special Concern (former Candidate species)
   FE = Listed as endangered under the federal Endangered Species Act
   FT = Listed as threatened under the federal Endangered Species Act
   CSC = CDFG species of special concern
   SE = Listed as endangered under the California Endangered Species Act
   ST = Listed as threatened under the California Endangered Species Act

California Least Tern (*Sterna antillarum browni*). The California least tern is state and federally listed as endangered. No critical habitat is designated for this species. California least tern migrate from wintering areas in Central and South America to breeding sites that range

from Baja California to San Francisco Bay. The nesting season extends from approximately 1 April to 15 September, during which time the birds remain in the vicinity of nesting sites and nearby feeding areas (Unitt 1984; Copper 1986; Fancher 1992; Copper and Patton 1998). As of 2002, numbers declined to approximately 3,600 nesting pairs in California, with less than 60 percent of the population in San Diego County (Patton 2002).

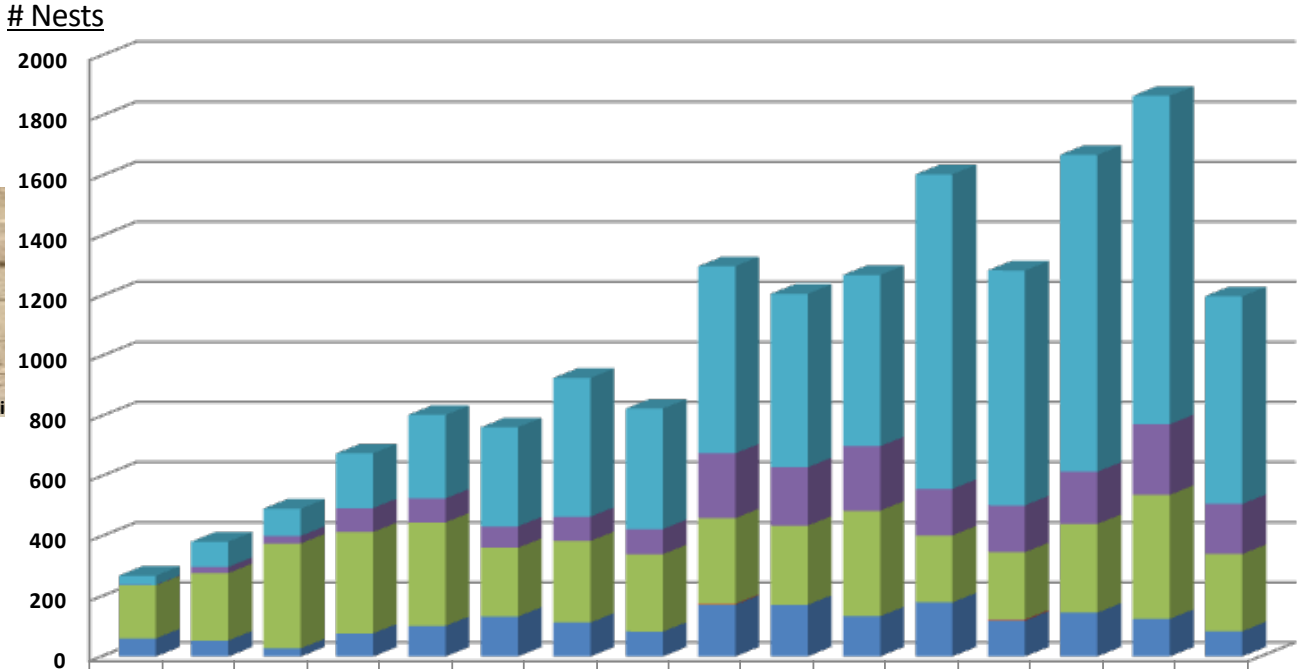
The decline of the California least tern population is attributable historically to losses in nesting and foraging habitats, but reproduction is currently limited by losses due to predators (SDUPD 1990; Copper and Patton 1998). Based on extensive annual surveys beginning in 1973, the status and distribution of California least tern within San Diego County is better known than perhaps any other species (Unitt 1984; Copper and Patton 1998). Historically, California least tern nested in colonies on many sandy beach areas of central and southern California. Due to increasing human populations, this species was displaced from many traditional nesting habitats to other habitats such as coastal lagoons and fill sites at coastal airports (SDUPD 1990). California least tern nest in open expanses of sand or light-colored dirt on or near beaches and the shores of coastal bays. The nest is a small depression that may be natural, man-made, or excavated by the birds. One to four eggs are laid; most nests have two or three. This species forages over shallow waters within 2 to 3 miles (3.2 to 4.8 km) of the nest, feeding primarily on small fish, including silversides (Atherinidae spp.) and northern anchovy (Massey and Atwood 1985).

The status of the California least tern on naval installations is evaluated annually (e.g., Copper and Patton 1998; Patton 2002; DoN 2006d). Known nesting colonies in the vicinity of San Diego Bay are located at NASNI, NAB Coronado, Lindbergh Field, D Street Fill in Chula Vista, Chula Vista Wildlife Reserve, Grande Caribe Isle, and the levees at Western Salt Works (DoN 2002). The number of nests on Navy properties such as Naval Base Coronado has increased markedly since the early 1990s, with the largest increases occurring on the NAB Coronado ocean-side beaches (Figure 3.5-2). The number of nests at South Delta Beach has been fairly steady in recent years, ranging from 71 to 80 between 1998 and 2002. In 2003, the number of nests at all sites, most notably South Delta Beach, increased again, although fledging success has been low because of predation, especially by gull-billed terns (*Sterna nilotica*) (T. Conkle, personal communication 2006). The NASNI colony has tripled in size since the early 1990's. Birds that nest at NASNI and at ocean-side beaches are likely to forage outside the general project area.

The Navy implements an extensive program of research, monitoring, protection, nest site enhancement, and avoidance measures to minimize the take of California least tern from Navy activities (USFWS and DoN 2004). A memorandum of understanding ("Tern MOU"; included in Appendix G of this EA) between the United States Fish and Wildlife Service Ecological Services and Refuges and the Naval Facilities Engineering Command (NAVFAC) Southwest and NRSW (USFWS and DoN 2004) summarizes efforts and commitments by the Navy and United States Fish and Wildlife Service to California least tern conservation and enhancement in San Diego Bay. The MOU includes agreed-upon Avoidance and Minimization Measures. With regard to the proposed action, the Pier 12 area and the FES sites are not designated as a nesting or forage area in the Tern MOU. They do not have any Habitat Areas of Particular Concern (HAPC) or Special Aquatic Sites, nor do they have any special characteristics such as extraordinary size, eelgrass beds, or unique fish habitat.

Naval Base Coronado
California Least Tern Nesting Data

Data from reports provided by E.Copper



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
SSTC-N (NAB Ocean side)	31	84	91	182	278	330	462	401	623	577	570	1047	782	1055	1093	691
Delta Beach South	1	21	25	80	80	71	81	84	216	195	215	155	156	174	235	167
Delta Beach North	177	224	349	337	344	229	271	257	285	263	351	223	224	295	413	257
NASNI Runway 11	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	0
NASNI MAT (1977=13)	60	53	27	77	102	133	113	83	172	172	134	180	119	146	125	84
Total	**269**	**382**	**492**	**676**	**804**	**763**	**927**	**825**	**1299**	**1207**	**1270**	**1605**	**1285**	**1670**	**1866**	**1199**

Source: DoN 2010

Figure 3.5-2. California Least Tern Nesting Data.

Of particular relevance to the proposed action is the Biological Opinion (BO) on the California least tern (tern) issued on 9 January 2007 by the United States Fish and Wildlife Service for the Fiddler's Cove Marina Repairs and Improvements project (Fiddlers Cove) and the record leading up to it (hereby incorporated by reference). At issue in the BO was whether covering of surface area of bay waters and the close proximity to a nesting colony would result in a "take" of the tern. Fiddler's Cove is located at NAB Coronado (Figure 1.1-1) approximately 100 m from the North Delta Beach tern-nesting colony. This distance represents the closest construction project to an active nesting colony in the past twenty years and defines the threshold of effect to this species with this type of project. The BO did not find any "take" of the tern as a result of the Fiddler's Cove project, nor did it require any terms or conditions such as mitigation. In comparison, the closest nesting colony to the Pier 12 site is located over 1.6 miles (2.6 km) to the south. Also, the proposed project areas are not designated as a forage area in the Navy/United States Fish and Wildlife Service Tern MOU.

Western Snowy Plover (*Charadruis alexandrinus nivosus*). The coastal population of the western snowy plover is federally listed as threatened and is a state species of special concern. It was federally listed in 1993; critical habitat was originally designated in 1999, and subsequently rescinded and redesignated in 2005 (USFWS 2005). A draft recovery plan was published in 2001 (USFWS 2001). Western snowy plover occur primarily on sandy ocean beaches and on mudflats bordering coastal lagoons and lakes (Unitt 1984). Their nesting season is March through mid-September. This species nests and rests in depressions in the sand above the high tide line, and forages on beaches and flats, feeding on worms, insects, and crustaceans. Loss and disturbance of nest sites along coastal beaches, due to development and human activity, is the primary reason for their threatened status. In addition to these factors, current threats and impediments to recovery include the extreme vulnerability of the species to avian and mammalian predators when nesting.

Western snowy plover breed locally in San Diego Bay, and occur in greater numbers during fall migration and winter (Unitt 1984; SDUPD 1990). Nesting locations in the San Diego Bay region include the "D" Street Fill (between the 24th Street channel and the Sweetwater River mouth), Lindbergh Field (historic location [Unitt 1984]), NASNI and other Silver Strand ocean-facing beaches, the south-facing shore of NASNI, and North and South Delta Beach (Unitt 1984; SDUPD 1990; DoN 1993, 2002, 2006d) (Figure 3.5-3). Wintering sites include the Sweetwater River mouth area, NASNI, North and South Delta Beach, and ocean beaches of the Silver Strand. Nesting data for 2006 (DoN 2006d) indicate the highest number of the snowy plover nests is located near NAB Coronado.

Other Sensitive Marine Birds and Shorebirds

Other sensitive species (state listed; California Department of Fish and Game species of special concern) that occur in San Diego Bay and which may occur in the project vicinity include the common loon (*Gavia immer*), double-crested cormorant, osprey, merlin (*Falco columba*), long-billed curlew (*Numenius americanus*), gull-billed tern (*Sterna nilotica*), California gull (*Larus californicus*), black skimmer (*Rynchops niger*), American peregrine falcon (*Falco peregrinus*), and the elegant tern. Most of these species are considered sensitive only where breeding or nesting occurs. These birds use intertidal flats, shallow water habitat, and/or manmade structures for foraging and/or resting, similar to areas adjacent to the project region.

3.5.1.4 Marine Mammals and Sea Turtles

Although marine mammal species, including two pinniped species (California sea lion, *Zalophus californiensis*, and harbor seal*, Phoca vitulina richardsi),* bottlenose dolphin (*Tursiops* spp.), and gray whales (*Eschrichtius robustus*) have been observed historically in San Diego Bay (W. Knorek, personal communication 2007), they are primarily associated with the north and north-central eco-regions. Gray whales and dolphins do not commonly move into the northern parts of San Diego Bay past the mouth, and sea lions and harbor seals typically occur only infrequently from the northern through central and southern regions represented by the Pier 12 and FES sites project region (W. Knorek, personal communication 2007). Marine mammal surveys conducted in February and May 2007 for the Navy (Merkel and Associates unpublished data) indicated that sea lions were the only species observed within the study area (North Eco-Region; Figure 3.5-1). General distribution patterns for these species are described below.

California sea lion (*Zalophus californiensis)*. California sea lions have a broad distribution from British Columbia south to Tres Marias Islands off Mexico (Hanan and Sisson 1992). This species breeds in June and early July from the Channel Islands south into Mexico. California sea lions feed on a variety of prey, including squid, octopus, and fish (anchovy, mackerel, herring, rockfish, hake, and salmon), and can occur throughout San Diego Bay, swimming and feeding. They were the only mammal species noted in San Diego Bay (North Eco-Region) by Merkel and Associates in 2007 (2007, unpublished).

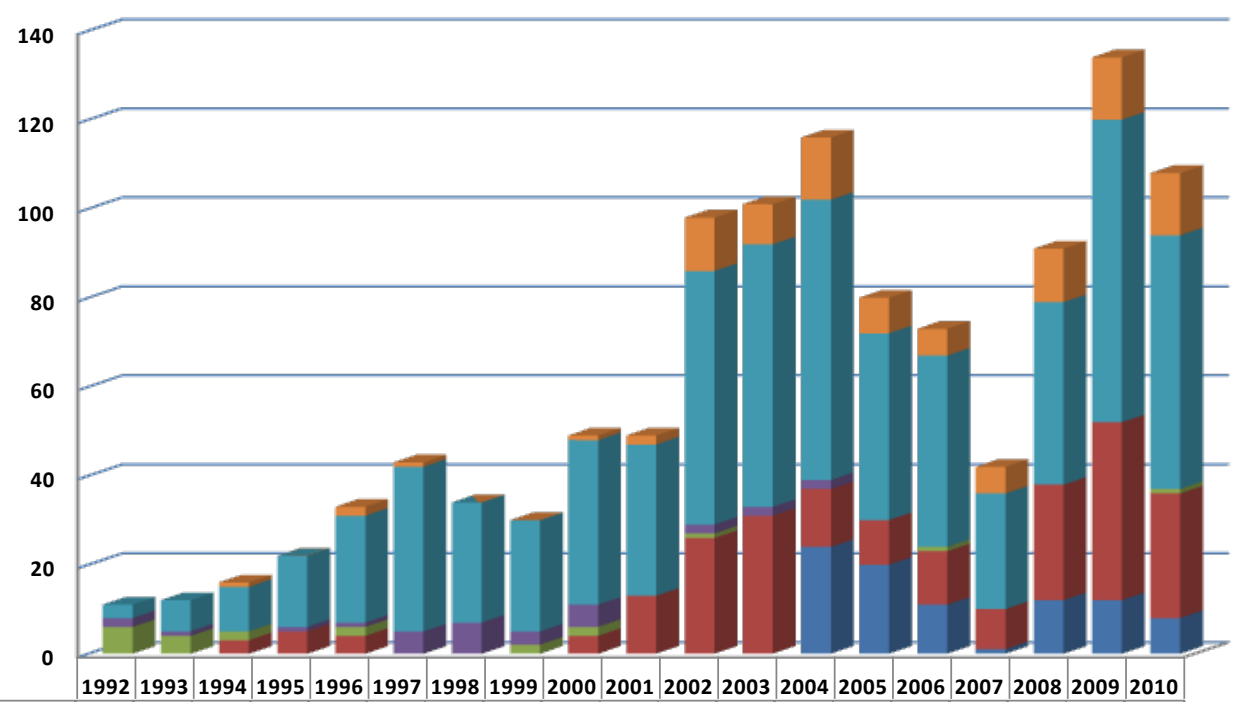
Harbor seal *(Phoca vitulina richardsi)*. Harbor seals range from Alaska to Cedros Island, Baja California (Hanan and Sisson 1992). These seals have been divided into three stocks, including a California group. Harbor seals are abundant along the entire California coast, typically occupying bays (including San Diego Bay), harbors, and river mouths where they prey on epibenthic and benthic species (Ainley and Allen 1992). During studies conducted by Merkel and Associates in 2007 (2007, unpublished), harbor seals were only recorded outside of San Diego Bay; however, they are regularly observed in many areas of the Bay (W. Knorek, personal communication, 2007).

Bottlenose dolphin (*Tursiops* spp.). Bottlenose dolphins occur from southern California to the tropics. In California, both coastal and offshore forms are found (Lagomarsino 1992). The coastal form inhabits shallow areas beyond the surfzone and is sometimes observed in bays and estuaries. This species is generally abundant, especially in southern California coastal waters. However, the majority of bottlenose dolphins are observed in open water, historically including the northern part of San Diego Bay. During studies conducted by Merkel and Associates in 2007 (2007 unpublished), bottlenose dolphin were only recorded outside of San Diego Bay.

Gray whales (*Eschrichtius robustus*). Gray whales spend summers in the Bering and Chukchi seas, off Alaska, and migrate to feeding grounds in winter along the west coast of Baja California, Mexico (Lagomarsino 1992). Gray whales differ from other baleen whales, primarily in their feeding behavior. These whales are bottom feeders, taking up mouthfuls of sediment and then straining out water and mud through the baleen, swallowing the benthic invertebrates. Gray whales are infrequently observed in San Diego Bay, averaging approximately one to two sightings per year during migration periods and, when observed, are seen primarily near the mouth of San Diego Bay and not in the Central Bay. Migrations past San Diego characteristically occur between December and March.

Naval Base Coronado
Western Snowy Plover Nesting Data

Data from reports provided by E.Copper



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
SSTC-S (NRRF)			1	0	2	1	0	0	1	2	12	9	14	8	6	6	12	14	14
SSTC-N (NAB Ocean side)	3	7	10	16	24	37	27	25	37	34	57	59	63	42	43	26	41	68	57
Delta Beach South	2	1	0	1	1	5	7	3	5	0	2	2	2	0	0	0	0	0	0
Delta Beach North	6	4	2	0	2	0	0	2	2	0	1	0	0	0	1	0	0	0	1
NASNI Ocean			3	5	4			0	4	13	26	31	13	10	12	9	26	40	28
NASNI Airfield													24	20	11	1	12	12	8
Total	11	12	16	22	33	43	34	30	49	49	98	101	116	80	73	42	91	134	108

Source: DoN 2010

Figure 3.5-3. Western Snowy Plover Nesting Data.

Green sea turtles (*Chelonia mydas*). Green sea turtles are a federally threatened species found year round in San Diego Bay, typically occurring in South Bay near the San Diego Gas & Electric plant. However, this species moves throughout the south and south-central eco-regions in summer during periods of higher water temperatures. During winter, they tend to be restricted to the South Bay due to elevated water temperatures from the plant's thermal discharge and the availability of food such as algae (McDonald et al. 1994). Since the decommissioning of the South Bay Power Plant, the animals have become more sedentary and localized in the South Bay (P. Dutton, personal communication). The population may be as high as 72 individuals, based on tagging and recapture data between 1990 and 1993 (McDonald et al. 1994). In October 2008, the Navy initiated programmatic informal consultation with the National Marine Fisheries Service regarding green sea turtles and their movements/home ranges throughout San Diego Bay. Unpublished data to date reveals the turtles primarily remain south of the San Diego Bay bridge with the majority of the year-round residents below the Sweetwater River mouth. In addition, the Navy has been pursuing programmatic informal consultation with the National Marine Fisheries Service on green sea turtles, with the aim of standardizing safeguards that the Navy could apply to most in-water construction projects to avoid adverse effects.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

Impacts to biological resources associated with the proposed action would be primarily from demolition of the existing Pier 12, construction of a new, larger Pier 12 and associated facilities, and creation of FES using concrete debris from demolition of the existing pier, as detailed in Chapter 2 and Appendix A. Activities described below that could potentially impact marine biological resources include dredging, noise associated with pier demolition and construction, and creation of the FES.

Marine Habitats, Plants, and Invertebrates

PLANTS

Per the Navy's eelgrass surveys conducted in 1994, 1999, 2004, and 2008, no eelgrass has ever occurred in or adjacent to the project site at Pier 12 or at the FES project sites. Even though the invasive alga *Caulerpa* has never been recorded in San Diego Bay (SDUPD 2007), a *Caulerpa* survey (Surveillance Level) would be conducted prior to in-water project activities, consistent with National Marine Fisheries Service (NMFS)/California Department of Fish and Game (CDFG) requirements (*Caulerpa* Control Protocol; Version 2.0, 15 March 2006).

INVERTEBRATES

Pier demolition, dredging, and construction activities for the proposed action would cause short-term impacts to existing benthic communities within the Pier 12 project area. As discussed in Section 3.4, dredging and subsequent pier construction would have a low potential for mobilizing sediment contaminants into the water column, so significant impacts to water quality or aquatic life would be unlikely. However, some infaunal and epifaunal species would be disturbed or lost as a result of these activities, including existing pier piling epifauna. These same types of species are expected to recolonize within a relatively short period of time (few months to a year) (Nichols et al. 1990) from adjacent undisturbed areas, so no significant long-term impacts to the benthic community would occur. Concrete debris from pier demolition

would be used to create two FES (Figure 3.5-1 and Chapter 2). The creation of these structures could provide additional habitat with long-term benefits for epifauna. Therefore, no significant net impacts to invertebrate species due to pier demolition and construction activities, including the FES sites, would occur. However, a pre-, post and three-year post construction monitoring program would be conducted at FES sites to characterize conditions and validate environmental benefits from the FES.

SENSITIVE INVERTEBRATE AND PLANT SPECIES

No sensitive invertebrate or plants species occur in the project region, including Pier 12 and the FES sites, so no impacts would occur.

Fish

FISH COMMUNITY

Impacts to fish communities in the project vicinity would consist of short-term disturbances of bottom sediments and habitat during pier demolition, dredging, and new pier construction. Fish species occurring in the immediate area may be temporarily displaced either directly by equipment and noise associated with these activities or indirectly by exposure to short-term changes in suspended sediments and turbidity during dredging. Potential impacts would be limited primarily to demersal (i.e., bottom-oriented) species and life-stages because pelagic species and life-stages are expected to continue using the water column during project activities, but may leave the immediate area due to short-term increases in noise and other disturbance from construction activities. These disturbances would coincide with the daily construction activities (i.e., during daylight hours) and, therefore, would not be continuous. For this reason, disturbances would consist of short-term, independent events. Fish species are expected to move back into the project area following the completion of in-water activities. As described above for invertebrates, concrete debris would be used to create fish enhancement structures that would provide long-term benefits to fish communities by adding hard substrate habitat. Therefore, no significant impacts to fish communities would occur. However, a pre-, post and three-year post construction monitoring program would be conducted at FES sites to characterize conditions and validate environmental benefits (productivity and recruitment) from the FES.

Short-term impacts associated with dredging, pier demolition, and construction activities would occur from increased noise levels, such as from pile driving. Some noise would also be generated by support vessels, small boat traffic, and barge-mounted equipment, such as generators. However, the most significant in-water noise potentially affecting fishes would be created while driving piles using an impact hammer. Due to the necessity of multi-strikes during pile installation, the analytical approach for determining underwater sound effects from impact hammer pile driving on fish requires using an accumulated Sound Effects Level (SEL) as the threshold (Fisheries Hydroacoustic Working Group 2008). The applicable criterion for injury to fish would be 187 decibels (dB_{SEL}) for a fish greater than 2 grams in weight and 183 dB_{SEL} for a fish less than 2 grams in weight (Fisheries Hydroacoustic Working Group 2008). In addition to injury thresholds, the Fisheries Hydroacoustic Working Group (2008) established underwater noise threshold criteria for behavioral impacts to fish, including startle response, at a level of 150 dB_{RMS}. Currently, underwater noise impact thresholds do not differentiate between fish species (Fisheries Hydroacoustic Working Group 2008).

The replacement pier would require installation of 700 structural piles (18 inch square pre-stressed concrete), 200 concrete fender piles (24 inch square pre-stressed concrete), and 200 composite (16 inch diameter) secondary piles. Underwater sound levels generated from installation of concrete piles using an impact hammer are around 176 dB_{SEL} (Illingworth and Rodkin 2007). Vibratory pile driving typically produces lower noise levels than impact hammers, although empirical sound data for installation of cement piles using vibratory equipment are not available (Illingworth and Rodkin 2007). The peak noise levels that would be generated during construction of the new Pier 12 cannot be specified because the type of pile driving equipment that would be used is uncertain prior to completion of construction design plans. However, assuming use of an vibratory hammer (Appendix A), pile installation would cause noise levels which are below the injury threshold but potentially above the threshold for behavioral impacts for fish based on the Fisheries Hydroacoustic Working Group (2008) thresholds.

Fish present during project activities should be capable of avoiding project equipment and areas temporarily affected by increased turbidity and noise from pile driving. Potential effects from turbidity/suspended solids would be minimized by the presence of a silt curtain during in-water activities. Most if not all of the fish species occurring in the area routinely experience turbid and noisy conditions due to natural processes and ship traffic within San Diego Bay. Therefore, only minor disturbances to fish species as a result of project activities are expected. As discussed above for invertebrates and in Section 3.4, dredging activities would have a low potential for mobilizing sediment contaminants into the water column that would impact water quality or aquatic life. Therefore, no significant impacts to fish would occur.

ESSENTIAL FISH HABITAT

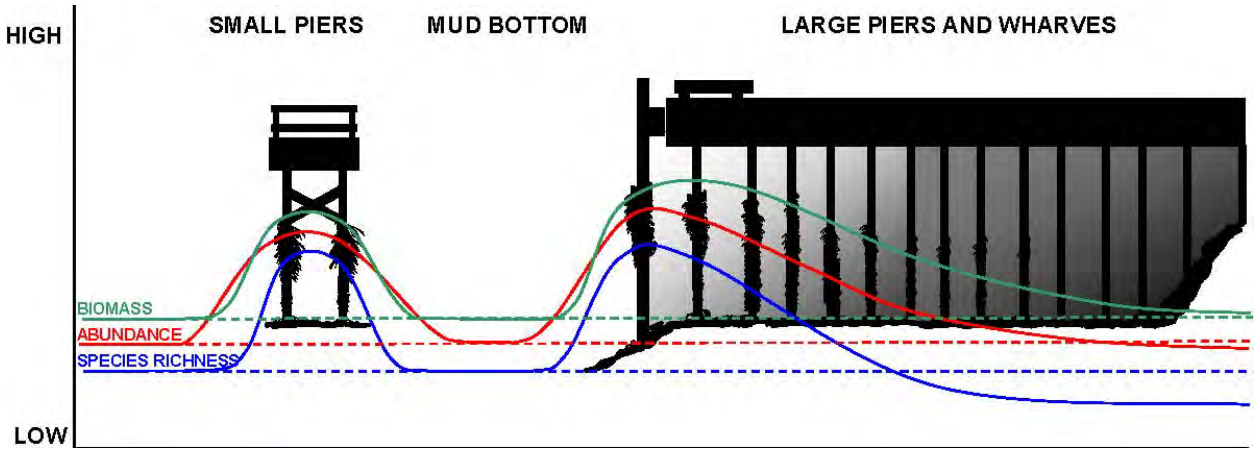
The formal Magnuson-Stevens Act EFH analysis is included as Appendix E. Although the Pacific Coast Groundfish Fisheries Management Plan manages 89 species over a large, ecologically diverse area (PFMC 2008), only two species, the leopard shark (*Triakis semifasciata*) and English sole (*Pleuronichthys vetulus*), likely occur in the project area (Table 3.5-2). Only two managed coastal pelagic fish species (PMFC 2006), northern anchovy and Pacific sardine, could potentially occur in the project area. These species are highly transient and can be found throughout San Diego Bay (Allen et al. 2002). For the proposed project, the in-water demolition and construction activities that would adversely affect EFH species and their habitat would be short-term and localized, as described above for other fish communities. Creation of the FES would also have short-term and localized adverse effects to EFH (primarily loss of soft bottom habitat), but these would be offset by long-term benefits from the creation of these artificial reef habitats. Artificial reef habitats are known to be associated with increased abundance and diversity of fish and invertebrate communities, including EFH species (Pondella et al. 2006).

EFH species in the project area would be affected by increased turbidity and noise levels, similar to those discussed above for fish communities. EFH species are highly mobile and would likely leave the project area during demolition, dredging, and construction activities and return when these activities are completed. Also, the adverse effects to the habitat and to forage species that occur at the sites would be short-term and localized.

The following general practices would be implemented to minimize impacts to the surrounding marine life and habitats:

- A silt curtain will be deployed during in-water work in areas where there is a potential for turbidity to control dispersion of suspended sediments.
- Spill kits and cleanup materials would be present during construction should there be a leak into the surrounding water.
- The discharge of oil, fuel or chemicals to waters of the state is prohibited; therefore, less hazardous materials would be used when practicable.
- All debris would be transported to, and disposed of, at an appropriate upland disposal site, or recycled, if appropriate.
- During project implementation the Navy would regularly monitor construction activities to ensure that no deviations from the proposed action occur. The Navy would report any violation of authorized impacts to NMFS within 24 hours of its occurrence.

Piers provide habitat for fish that is different from habitat associated with open areas of the Bay. Merkel and Associates (2010) documented that fish abundance and biomass may be reduced beneath the inner portions of large piers, whereas fish abundance, diversity, and biomass near the outer margins of pier structures are elevated compared to open water areas, as illustrated schematically in Figure 3.5-4. Therefore, while the proposed project would result in a change in habitat within an area of 3.0 acres (representing the larger footprint of the replacement pier compared to the existing pier), no ecological change related to bay shading, as reflected in measurable net changes in fish abundance, diversity, and biomass, would be expected to occur in the vicinity of the replacement pier.



Source: Merkel and Associates (2010)

Figure 3.5-4. Qualitative Biological Metrics for Small and Larger Piers.

As described in the above effects analysis, the Navy has determined that the construction phase of the proposed action would adversely affect EFH for the federally managed fish species listed above. However, the anticipated adverse effects would be short term and localized because pile driving operations would consist of a series of independent events that start and stop on a

regular (daily) basis. Further, no net ecological change would be expected. Therefore, EFH Conservation Recommendations would not be necessary to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH.

Marine Birds

Project activities would result in short-term increases in noise and human activity, and short-term decreases in water quality in the project area. These activities would temporarily disturb marine birds, most likely resulting in avoidance while the activity is occurring. However, because the project area is routinely subject to elevated noise and activity of workers and equipment associated with common industrial practices, short-term project related disturbances are not expected to significantly affect the foraging and resting of marine birds. Because the project area is developed and similar resting and foraging habitats occur nearby, common shorebirds or waterbirds, if disturbed by the activity, would move to other nearby similar habitats and return when the project is complete. Therefore, no significant impacts to marine birds would occur.

Potential effects on California least tern, western snowy plover, and other sensitive species are discussed below.

CALIFORNIA LEAST TERN

The proposed project sites, including Pier 12 and the FES, are not located within an area described in the Tern MOU between the United States Fish and Wildlife Service and Navy as known tern nesting or high to very high foraging habitat (see Section 3.5.1.3). The closest foraging habitat is located approximately 1.5 miles (2.4 km) west of the Pier 12 project area and the nearest nesting colony is over 1.6 miles (2.6 km) to the west. Comparable to other species described above, it is reasonable to expect that terns that may forage in the project region would temporarily avoid the area due to the short-term increase in noise and other project activities. However, increases in noise and activity associated with the demolition and construction phases of the project would not vary substantially from normal levels of activity, vehicular traffic, and marine vessels operating in the immediate area. Because of the distance to known nesting areas, the transient nature of the forage base, the temporary nature of project related disturbances, and the abundance of comparably suitable foraging habitat adjacent to the project area, the proposed action may affect but not likely to adversely affect this species, as determined from the informal consultation (see Appendix G) and the Fiddler's Cove BO.

This conclusion takes into account the 3.0 acres of net increase in surface coverage as a result of the Pier 12 component of the project. This is consistent with the NEPA and ESA findings for the adjacent Modular Hybrid Pier project (DoN 2003) and the MOU on tern nesting issued in May 2004 between United States Fish and Wildlife Service and Navy which outlines measures to keep potential impacts to the tern not significant under this NEPA analysis. Regardless, the Navy would review the construction schedule prior to the start and during each phase of the project, and every effort would be made to compress or adjust the schedule for in-water construction activities to avoid or minimize intrusion into the California least tern breeding season. Additionally, the Navy would employ avoidance and minimization measures as contained in the MOU, including use of a silt curtain in areas where there is a potential for turbidity to prevent dispersion of suspended sediments outside of the immediate project area.

WESTERN SNOWY PLOVER

No western snowy plovers are known or expected to occur in the vicinity of the proposed action because of a lack of suitable habitat. As a result, there would be no effect to this species as a result of the proposed action.

OTHER SENSITIVE BIRD SPECIES

No suitable habitat or historical records for the light-footed clapper rail or other listed species have been noted in the vicinity of the proposed action sites. The nearest records for the clapper rail are from Sweetwater Marsh, approximately 0.5 mi (0.8 km) south of the project site. Potential effects would be similar to those described for the California least tern. Therefore, there would be no effect to this species as a result of the proposed action.

Marine Mammals and Sea Turtles

As described above for fish, temporary increases in underwater noise levels from construction activities, including pile driving could temporarily disturb marine mammals and sea turtles in the immediate vicinity of the project site. The National Marine Fisheries Service identified threshold criteria for determining the onset of Level A harassment as 190 dB_{RMS} re 1µPa for pinnipeds and 180 dB_{RMS} re 1µPa for cetaceans (65 FR 16374-16379; Table 3.5-4). Noise levels during construction of the proposed project are not expected to reach Level A thresholds but they could potentially reach Level B thresholds (Table 3.5-4).

Table 3.5-4. Marine Mammal Injury and Disturbance Thresholds for Underwater Sounds.

Marine Mammals	*Underwater Vibratory Pile Driving[2] Threshold (dB re 1 µPa)*		*Underwater Impact Pile Driving[3] Thresholds (dB re 1 µPa)*	
	Level A Injury Threshold	*Level B Disturbance Threshold*	*Level A Injury Threshold*	*Level B Disturbance Threshold*
Cetaceans (whales, dolphins, porpoises)	N/A	120 dBRMS	180 dBRMS	160 dBRMS
Pinnipeds (seals, sea lions, except harbor seal)	N/A	120 dBRMS	190 dBRMS	160 dBRMS
Harbor seal	N/A	120 dBRMS	190 dBRMS	160 dBRMS

Notes:
1. Sound level at which pinniped haul-out disturbance has been documented. Not an official threshold, but used as a guideline.
2. Non-pulsed, continuous sound.
3. Pulsed sound

dB = decibel; N/A = not applicable, no established threshold; RMS = root mean square

MARINE MAMMALS

No marine mammals are expected to occur in the project area where pile driving will occur. There is a high probability they will occur in the FES project area. Potential impacts to marine mammal species would primarily be from noise generated during construction activities such as pile driving (described above). Any marine mammals present in the general vicinity would be able to detect the noise and associated in-water activities and may temporarily avoid the project area. Given the low levels of disturbance and limited abundance of these animals in the project region, project activities would not adversely affect marine mammals, consistent with specifications of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). Further, as previously discussed, the project areas would represent a small percentage of

the available resources, and project activities are considered short-term and localized. Therefore, this project would cause no harm, harassment, or take of marine mammals under the Marine Mammal Protection Act.

SEA TURTLES

Sea turtles have a higher probability of occurrence in the per project area than marine mammals but a very low potential to occur at the FES project sites. Sea turtles may travel throughout San Diego Bay, particularly during summer, but they are observed infrequently and have not been reported from the vicinity of the project site. The Navy has been in informal consultation with the National Oceanic and Atmospheric Administration (NOAA) since starting a green sea turtle study in December 2007. Although no green sea turtle have been observed or are expected in the project area, interim findings of the turtle study indicate that green sea turtles move randomly though the southern part of San Diego Bay and may loaf and forage in the vicinity of the pier project site. There is potential for sea turtles to occur at the FES project sites.

Potential impacts to sea turtles would be the same as described above for marine mammals, primarily from noise generated during construction activities such as pile driving. This species would be able to detect disturbances from the project and may temporarily avoid the area, but this would represent a small percentage of the available habitat, and any disturbance would be short-term and localized. Therefore, the proposed project may affect but not likely to adversely affect turtles based on the potential infrequent occurrence of this species in the project area and consistent with specifications of the Endangered Species Act.

To avoid potential adverse effects to sea turtles, the Navy would employ avoidance and minimization measures including visual monitoring of the waters surrounding the entire project area to as great a distance as possible under reasonable conditions prior to commencing pile driving activities, during the initial stages of pile driving, and after a break in pile driving for more than 30 minutes. If any sea turtles are seen within visual range, the Navy will not commence pile driving activities until 15 minutes has passed since the last such sighting. If a sea turtle moves within visual range during the initial stages of pile driving (i.e., during ramp-up procedures), the Navy will not continue pile driving activities until 15 minutes has passed since the last such sighting. If a sea turtle moves within visual range while pile driving activities are occurring, such activities can continue without interruption. Prior to the start of pile driving each day, after each break of more than 30 minutes, and if any increase in intensity is required, the Navy would use a ramp-up procedure. This procedure involves a slow increase in the pile driving to allow any undetected animals in the area to voluntarily depart. The Navy, in consultation with the National Oceanic and Atmospheric Administration has determined through informal consultation that this will prevent adverse effects on this species and the impacts would not be significant.

Avoidance, Minimization, and Mitigation Measures

Because potential impacts on marine biological resources would be short-term, localized, and not significant under the proposed action, no mitigation measures are required. However, a survey for *Caulerpa* would be conducted within 30 days prior to the initiation of in-water construction activities, in conformance with National Marine Fisheries Service/California Department of Fish and Game specifications. In addition, the Navy would review the construction schedule prior to the start and during each phase of the project, and every effort

would be made to compress or adjust the schedule for in-water construction activities to avoid or minimize intrusion into the California least tern breeding season. The Navy also would employ avoidance and minimization measures as contained in the MOU, including use of a silt curtain to prevent dispersion of suspended sediments outside of the immediate project area. Creation of FES (artificial reefs) from concrete debris would provide long-term benefits to marine resources by adding hard substrate for fish and invertebrate communities. A pre-, post and three-year post construction monitoring program would be conducted to validate environmental (recruitment) benefits from the FES. Additionally, during coordination with National Marine Fisheries Service and the California Coastal Commission the Navy agreed to visually scan the project surface area for the presence of marine mammals and sea turtles prior to the commencement of in-water construction activities, and employ other avoidance and minimization measures related to pile driving activities as described above (Appendices F and G).

3.5.2.2 No-Action Alternative

The No-Action Alternative would not impact marine biological resources because no demolition, dredging, and construction activities would occur. However, if the demolition of existing Pier 12 did not occur the concrete debris would not be available for creation of FES that are considered beneficial to fish and invertebrate species, including EFH, in San Diego Bay.

3.6 TERRESTRIAL BIOLOGICAL RESOURCES

3.6.1 Affected Environment

This section addresses terrestrial biological resources present in the vicinity of the Pier 12 replacement site. Marine biological resources and marine and shore birds are addressed in Section 3.5.

3.6.1.1 Plant Communities and Common Wildlife Habitats

The shoreline in the vicinity of Pier 12 is characterized by graded, artificial fill that has been extensively built on and is stabilized at the water's edge by a quaywall, riprap, retaining walls, piers, and other military industrial infrastructure (NBSD 2002). Within 0.5 mile (0.8 kilometer), vegetation is limited to a mowed lawn, a few ornamental trees, and landscaped plantings along roadsides and buildings (NBSD 2002). As a result, the project area generally lacks habitat for terrestrial wildlife, and is characterized by ongoing military industrial use. Terrestrial mammals that have the potential to occur would be limited to those species accustomed to urban/developed environments such as house mouse (*Mus musculus*), cottontail rabbit (*Sylvilagus auduboni*), and Virginia opossum (*Didelphis virginiana*) (NBSD 2002). Reptiles that are likely to occur include the common western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*) (NBSD 2002). No amphibians are known or expected in the area because of the lack of freshwater aquatic habitats (NBSD 2002).

Numerous common landbirds are likely to occur as residents or on a transient basis along the developed NBSD shoreline in the vicinity of the Pier 12 replacement project (NBSD 2002). These include mourning dove (*Zenaida macroura)*, American crow (*Corvus brachyrhynchos*), house finch (*Carpodacus mexicanus*), European house sparrow (*Passer domesticus)*, mockingbird (*Mimus polyglottos*), and Eurasian starling (*Sturnus vulgaris*).

Piers and other artificial structures along the shoreline are used for resting by marine and shore birds. Use of the nearshore marine habitat by marine and shore birds at Pier 12 is discussed in Section 3.5.

3.6.1.2 Sensitive Plant and Animal Populations

Federally Listed Plant Species

No federally listed plant species are known or expected to occur in the vicinity of the project area because of lack of suitable habitat (NBSD 2002).

Federally Listed Animal Species

Piers and other manmade structures, and shallow-water habitat of the nearshore marine environment are used by California least tern, which is a state- and federally listed endangered species. This and other federally listed or otherwise sensitive marine and shore birds are described in Section 3.5.

Because of the lack of suitable habitat and limited terrestrial natural resources, no listed, proposed, or candidate threatened or endangered terrestrial species are expected (NBSD 2002).

No federally listed terrestrial wildlife species are known or likely to occur in the project vicinity (NBSD 2002).

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

Plants and Animals

No sensitive vegetation communities or habitats occur at the project site or would be affected by the proposed action. Terrestrial wildlife would be limited to those species that are accustomed to urban and/or industrial environments. Those common wildlife species which may be present in the vicinity of the project site may avoid the area during periods of increased noise associated with the replacement of the pier, dredging, or other construction. Avoidance would most likely be short term and common species would return following the disturbance. Due to the ongoing increased noise environment associated with military industrial sites, common species to the area are generally accustomed to ongoing human presence and activity. As a result, because only very limited suitable terrestrial habitat occurs, comparable habitat occurs immediately adjacent to the project site, and increased noise and activity associated with the project would be short term, no significant impacts on common wildlife and associated habitats would occur.

Threatened and Endangered Species

Impacts on federally-listed or otherwise sensitive marine or shore birds are discussed in Section 3.5. No federally-listed terrestrial plants or wildlife are known to occur in the vicinity of the project site, principally due to a lack of suitable habitat. As a result, no effect would occur to threatened and endangered species.

Mitigation Measures

Because significant impacts on terrestrial biological resources would not occur, mitigation measures are not proposed.

3.6.2.2 No-Action Alternative

Under the No-Action Alternative, replacement of Pier 12 would not occur and current operations and activities associated with existing Pier 12 would continue. Therefore, under the No-Action Alternative no impacts or changes to vegetation and/or terrestrial wildlife and their habitats would occur.

3.7 LAND USE

3.7.1 Affected Environment

This section discusses existing land uses at and adjacent to Pier 12 to evaluate the compatibility of the proposed action with those uses. The attributes of land use addressed in this analysis focus on general land use patterns, management plans, policies, and regulations.

3.7.1.1 Pier 12 Project Site and Surrounding Areas

NBSD is a shore activity under the administration of Navy Region Southwest, which is an administrative command that oversees the functions and operations of the San Diego, Point Loma, and Coronado Naval Bases (DoN 2006a; NBSD 2002). NBSD covers about 977 acres of land and 326 acres of water adjacent to the east side of San Diego Bay (Figure 1.1-1) and immediately south of the San Diego Central Business District. NBSD is the major West Coast logistics base for Navy surface forces operating in the Pacific Theater (DoN 2006a). The installation is divided in two by Harbor Drive and the adjacent Santa Fe rail line, creating areas known as the wet side, west of Harbor Drive, and the dry side, east of the Harbor Drive. Piers 1 through 13 are located on the waterfront on the wet side.

Land uses at NBSD consist of ten categories, including Port Operations, Ship Maintenance, Training, Supply, Administration, Public Works, Public Safety, Ordnance, Bachelor Housing, and Community Support (DoN 2006a). NRSW Port Operations oversees ship use of Pier 12 and all of the installation's waterfront. Port Operations are focused on the support of homeported ships, small craft operations and berthing, and include piers, quaywalls, fueling facilities, and waterfront operations buildings (DoN 2006a).

Nearly all areas adjacent to the project site are similar in nature to the industrial waterfront activities carried out at these military and private waterfront facilities. Shipbuilding and repair yards are in the area north of NBSD, and industrial uses and warehousing are to the south. Existing land uses adjacent to the Pier 12 site, including the laydown and CDF site, are waterfront operations, parking lots, and limited recreation (DoN 2006a).

The bayward one-third of existing Pier 12 is designated as "Navy Ship Berthing" by the San Diego Unified Port District Master Plan, and the landward two-thirds, while within the tidelands area, are deeded federal lands and are not designated for planned land use by the Master Plan (DoN 2006a). The NBSD land area adjacent to the piers is also deeded federal lands and is not designated for planned land use by the San Diego Unified Port District Master Plan. An area designated "Main Ship Channel" by the San Diego Unified Port District Master Plan is approximately 500 ft (152.3 m) wide in this area and runs in an approximate north-south direction, perpendicular to the piers. At its closest point, the navigation channel is approximately 100 ft (30 m) bayward of the existing Pier 12.

The cities of San Diego and National City border NBSD on the north and south, respectively. Although the project area is located within San Diego County, the local government does not have any jurisdictional authority over land use on NBSD because it is a federal military facility.

3.7.2 Environmental Consequences

3.7.2.1 Proposed Action

Pier demolition and construction activities as well as dredging and dredged material disposal activities would be compatible with NBSD operational goals and would not be inconsistent or in conflict with environmental goals, objectives, or guidelines. Project-related activities would temporarily conflict with NBSD operations and nearby vessel access during construction, but the Navy would redirect activities to other nearby NBSD locations to avoid any potential land use incompatibilities. Dredging activities would result in the long-term benefit of improved vessel access.

The new pier would extend 42 ft (13 m) bayward of the end of existing Pier 12 and, therefore, within 60 ft (18 m) of the eastern edge of the navigation channel. The replacement pier would remain inside (shoreward) the floating security barrier and, therefore, would not affect navigation or access by commercial vessels to marine terminals, marine industrial areas, or military bases. The replacement pier would extend beyond the existing headline, and the Navy would therefore need to request a waiver from the United States Army Corps of Engineers.

Demolition and construction activities would involve heavy equipment operations in an area where NBSD facilities and operations are presently located, and where nearby private and other non-NBSD public lands are used for marine related and industrial or storage/warehousing uses. Construction activities would not be incompatible with these existing land uses. The nearest residential or other non-compatible land uses are located east of Interstate 5, at a minimum distance of approximately 2,000 ft (609 m) from the pier construction site. At this distance, and separated by Interstate 5, existing railroad lines, and existing industrial and NBSD uses, pier construction activities would not significantly impact these residential uses.

Dredged material disposal at an ocean disposal site (LA-5) would involve shipment of material to the ocean using the navigation channel, and would not be inconsistent with existing or planned land uses along the shipment route. Therefore, disposal would not conflict with any local land use plans. Dredged material disposal at the Otay Landfill would involve truck traffic from NBSD to the landfill, primarily using freeways and other major surface streets (see Section 3.9). This disposal operation would not conflict with local land use plans.

No significant land use impact would occur as a result of the proposed action.

Mitigation Measures

There would be no significant impact on land use associated with the proposed action. Therefore, no mitigation measures are proposed.

3.7.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in existing land use conditions, and no conflict with any applicable land use plan, policy, or regulation. No impacts would occur.

3.8 SOCIOECONOMICS

3.8.1 Affected Environment

This section discusses social and economic topics within the project region, focusing on growth trends, commercial development, and recreational activities within the San Diego Bay area. The section also covers Environmental Justice issues.

3.8.1.1 Population

The socioeconomic environment potentially affected by the proposed action extends throughout all of San Diego County, which has a current population of about 3.25 million based on 2010 population data (San Diego Association of Governments [SANDAG] 2010a), a 5.1 percent increase from 2006 (Table 3.8-1). The county is projected to grow to a population of 3.5 million by the year 2020 (SANDAG 2010a).

Table 3.8-1. Population Data from the Project Vicinity.

	Population				
	1990[1]	*2000*[1]	*2006*[2]	*2010*	*2020*
San Diego County	2,498,016	2,813,833	3,066,820	3,224,432[3]	3,535,000[3]
San Diego	1,110,549	1,223,400	1,311,162	1,376,173[3]	1,542,528[3]
National City	54,249	54,260	63,537	57,799[3]	62,300[3]
U.S.	248,709,873	281,421,906	298,398,484	307,006,550[4]	335,804,546[5]

Notes/Sources:
1. Based on U.S. Census data.
2. Based on information from the San Diego County Assessor's office.

Source: SANDAG 2007a (all information except 2006 U.S. population); U.S. Census Bureau 2007 (2006 U.S. population).
3. SANDAG 2010a.
4. U.S. Census Bureau 2010a (2009 U.S. population).
5. U.S. Census Bureau 2010b.

The city of San Diego and National City border NBSD on the north and south, respectively. About 42 percent of the county's residents reside in the city of San Diego, and with a population of 1.4 million people it is the largest city in the county and the eighth largest city in the U.S. National City has a population of about 57,799 (SANDAG 2010b).

Table 3.8-1 shows the total population of San Diego County, the city of San Diego, and National City in the years 1990, 2000, 2006, 2010, and 2020. In addition, Table 3.8-1 references the total U.S. population between 1990 and 2000 as a general comparison. Overall, San Diego County, the city of San Diego, and the U.S. experienced similar increases (10 to 13 percent) between 1990 and 2000.

The 2010 Census data numbers are not finalized, but comparison of total U.S. population data from the 2000 Census and 2009 data show an increase of 9.1 percent. Comparison of 2006 and 2010 total U.S. population data show an increase of 2.9 percent; San Diego County shows an increase of 5.1 percent; city of San Diego shows an increase of 5.0 percent; and National City shows a decrease of 9.0 percent. On a percentage basis, San Diego (County and city) population

increased by just under half the total U.S. population growth from 2006 to 2010. National City population however, decreased three-fold for the same four years.

3.8.1.2 Commercial and Recreational Activities

Military, marina, and industrial land uses predominate along San Diego Bay. The waterfront piers of San Diego Bay and the Burlington Northern railway corridor are centers for industrial development. Redevelopment in the waterfront area has emphasized public access and recreational opportunities, while office buildings, commercial facilities, residential units, and hotels have mainly been built in the adjacent Centre City commercial area of San Diego.

The San Diego Bay region maintains a variety of commercial activities subject to several governmental jurisdictions. The San Diego Unified Port District and the cities of Coronado, San Diego, Chula Vista, and National City are neighbors to Navy and U.S. Marine Corps military installations. Manufacturing and government activities surrounding the bay historically have dominated regional employment. The San Diego regional economy continues to undergo a dynamic transformation from one based substantially on military and defense spending to an economy that is led by high-technology companies competing in the international marketplace. These mostly small and mid-size high-tech firms produce the products and services most in demand in the new global economy (City of San Diego 2010a). Since a recession in the early 1990s, San Diego has seen dramatic increases in its gross regional product, exports, per capita income, and employment (City of San Diego 2010a). Other industries showing significant growth include environmental, transportation, recreational goods, and international trade. San Diego is home to one-third of the country's top 20 environmental design firms, has more than 1,000 companies concentrating on transportation technologies and services, and has more than 600 companies in the region with binational operations (City of San Diego 2010a). San Diego's gross regional product reached $177.2 billion in 2009 (City of San Diego 2010b). Independent studies indicate that San Diego will be one of the top 10 cities in the country for job growth through 2025, and many of the high-tech jobs are being created by emerging high-tech companies in the region (City of San Diego 2010a).

San Diego region's total employment for 2010 is 1,573,742, representing an increase of 8.6 percent from 2004 (SANDAG 2010a). Military employment accounts for 89,269 of San Diego's jobs (5.7 percent) (SANDAG 2010c). Department of Defense spending in San Diego grew an average of more than 8 percent per year between 2004 and 2008 (KPBS 2010). Recent data (2008) shows that the military generates over $16 billion annually to the San Diego economy; defense spending includes salaries for active duty military, benefits for veterans, and the construction of military housing and facilities in addition to a wide range of defense contracts (KPBS 2010).

Commercial Fishing

San Diego Bay is an integral part of the commercial fishing activity in the region, representing important boat mooring/docking and landing facilities. San Diego commercial fishing earnings from 1985 to 2008 totaled nearly $200 million (San Diego Unified Port District 2010). In 2008 alone, commercial fishing brought in nearly $7 million in ex-vessel value, representing the price paid to fishermen (San Diego Unified Port District 2010). In 2008, ex-vessel value at Tuna Harbor was $2.32 million and ex-vessel value at Driscoll's Wharf was $703,000. San Diego commercial fisheries jobs are expected to rise by more than 30% by 2016 (San Diego Unified

Port District 2010a). According to projections, the number of fishery-related jobs in San Diego County should rise from 130 to 170 jobs in 2016 (California Occupational Guide 2008 as cited in San Diego Unified Port District 2010a).

Currently, there is no commercial fishing within San Diego Bay, although numerous species inhabiting the Bay support fisheries that occur elsewhere in southern California (DoN 2000b). A variety of marine species, including California halibut, rockfish, shark, swordfish, tuna, rock crab, California spiny lobster, and sea urchin, are caught in ocean waters throughout the region (CDFG 2010). These species account for over 90 percent of all catches. In 2005, 1.9 million pounds of fish were commercially caught off the coast of San Diego. This equates to an economic value of 4.1 million dollars (NMFS 2007).

Commercial Shipping

San Diego Bay is a major naval, commercial, and recreational center. Besides serving the San Diego metropolitan area, it is a major shipping point for southern California, Arizona, and New Mexico agricultural products. Overall, the Port of San Diego's maritime business generates about $600 million annually to the San Diego region. About 5,000 jobs are supported by the region's maritime industry (San Diego Unified Port District 2010b). For the 2008-2009 fiscal year, 2.8 million metric tons of cargo passed through the terminals, including almost 265,000 vehicles and 97,000 containers (San Diego Unified Port District 2010b).

Recreation

San Diego Bay represents an important recreational amenity to the region, with several parks and beaches for public use (San Diego Unified Port District 2010c; The Big Bay 2010). Activities such as swimming, diving, surfing, and camping are popular on the ocean side of the Coronado Peninsula. Sailing, power boating, and fishing vessels are moored at various docks around the Bay including Shelter Island and Harbor Island. Recreational fishing occurs from boats (outside and inside the Bay), from piers, and (where access allows) from shore. Picnicking, walking, and bicycling are popular uses of bayside parks.

A floating security barrier restricts access to the Navy piers at NBSD by persons and vessels except those owned by, under hire to, or performing work for the Navy (DoN 2006a). Therefore, the project site does not presently support recreational activities.

3.8.1.3 Environmental Justice

In 1994 an Executive Order was issued on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898, 59 Federal Register 7629 [1994]). This Executive Order is designed to focus federal attention on environmental and human health conditions in minority and low-income communities. The Executive Order is further intended to promote non-discrimination in federal programs substantially affecting human health and environment and to provide for information access and public participation relating to such matters. Under the Executive Order, federal agencies must identify and address disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority populations and low-income populations. Specifically, the Executive Order calls for the development of agency-specific strategies; improving research, data collection, and analysis; identifying differential patterns of

natural resource consumption; and ensuring effective public participation and access to information. The Department of Defense published the Strategy on Environmental Justice (DoD 1995), and the Center for Environmental Quality published Environmental Justice Guidance under the NEPA (CEQ 1997) to assist in assessing environmental justice issues.

As part of the directives that accompanied the Executive Order, federal agencies must promote enforcement of all health and environmental strategies in areas where minority and low-income populations reside. The Center for Environmental Quality Environmental Justice Guidance under NEPA (CEQ 1997) recommends identifying minority or low-income communities in the vicinity of a proposed action to determine whether they may be disproportionately or adversely affected by the proposed action; identifying any potential for multiple or cumulative exposure to human health or environmental hazards; recognizing interrelated cultural, social, occupational, historical, or economic factors that may amplify environmental effects; and developing effective public participation strategies, including overcoming any linguistic barriers and seeking tribal representation as appropriate.

The Center for Environmental Quality (1997) indicates that "Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected areas is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." The Center for Environmental Quality (1997) also indicates that low-income populations should be identified using poverty thresholds published annually by the Census Bureau, and adds that "In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect." For example, in 2009, the poverty threshold for a family of two adults and two children was $21,756 (U.S. Census Bureau 2010c). The Decennial Census provides information on the percentage of residents in a given geographic area who live in households with income below the poverty level.

Minority and Low Income Populations

Three areas, San Diego, National City, and San Diego County, are most relevant for assessment of potential environmental justice issues from the proposed action. San Diego County serves as a standard by which the relative proportion of minority populations in these areas can be measured.

Minority populations include all persons identified by the Census Population and Housing as Hispanic or Latino ethnicity, regardless of race, as well as non-Hispanic persons who are Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and persons of two or more races.

In San Diego County, the city of San Diego, and National City, the percent minority populations are 50.8 percent, 55.5 percent, and 90.3 percent, respectively (U.S. Census Bureau 2007; Table 3.8-2). In these areas, the Hispanic/Latino Community comprises the majority of the minority population. Note that because the city of San Diego and National City both have a minority population over 50 percent, under the Council of Environmental Quality guidance these cities represent a "minority population."

In San Diego County, 12.4 percent of the population lives below the poverty level according to the 2000 Census; the percentage is slightly higher in San Diego, and almost 10 percentage points higher in National City (U.S. Census Bureau 2007; Table 3.8-2.

Table 3.8-2. Minority and Poverty Percentages in Project Area.

	San Diego County	*San Diego*	*National City*
Total Population[1]	3,224,432	1,376,173	57,799
Minority Population[1]	1,638,037	764,139	52,179
% Minority	50.8%	55.5%	90.3%
Population Below Poverty Level[2]	338,399	172,527	11,233
% Below Poverty Level[3]	12.4%	14.6%	22.0%

Notes:

1. The percentage of low-income persons is calculated as the percentage of all persons for whom the Bureau of the Census determines poverty status, which is generally a slightly lower number than the total population because it excludes institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old.
2. Data for the 2010 Census are not yet available; therefore the 2000 Census data are used for this analysis. Data for the 2000 Census is collected in 1999; thus, this statistic uses the 1999 poverty thresholds. For example, the 1999 poverty threshold for a family of two adults and two children was $16,895 (U.S. Census Bureau 2007).

Source: 1. SANDAG 2010b; 2 and 3. U.S. Census Bureau 2007.

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action

Population

No net changes in the number of permanent or transient military and civilian personnel at NBSD would occur as a result of the proposed action. Short-term construction jobs created by the proposed action would likely come from the existing worker pool in San Diego County. The number and length of these construction jobs are minor when compared to the size of existing county-wide construction employment and would not impact the construction industry. Therefore, while the proposed action would provide some temporary construction work, it is not expected to create permanent jobs that would contribute to an increase in the local population.

Commercial and Recreational Activities

The proposed action would replace an existing military pier with a new, larger military pier. The project site is within an area restricted to the general public. Therefore, the proposed action would not impact private, commercial or public recreational activities.

As part of the proposed action, concrete debris from demolition of the existing Pier 12 would be used to create two FES (artificial reef habitats). Studies of other FES in San Diego Bay have demonstrated that, in addition to creating a diverse fish habitat, they increase localized fishery production in terms of eelgrass restoration and production of fish species that are potentially important to commercial and recreational fisheries (Pondella et al. 2006). Therefore, creation of two FES would have a beneficial impact on recreation in San Diego Bay.

Environmental Justice

The proposed action would not have any adverse effect on human health or create any safety risks for populations in adjacent areas because the project area is isolated on a military base and would be isolated from the general population. Construction-related traffic, especially truck traffic to the Otay Landfill, would occur primarily in industrial areas and on state and federal highways away from residential areas. Therefore, there would be no disproportionately high and adverse environmental or human health impacts on low-income or minority populations.

Mitigation Measures

There would be no significant socioeconomic impacts associated with implementation of the proposed action. Therefore, no mitigation measures are proposed.

3.8.2.2 No-Action Alternative

The No-Action Alternative would not cause any changes to the socioeconomic conditions in the vicinity of the NBSD. Therefore, no impacts would occur.

The No-Action Alternative would not have any adverse effect on human health or create any safety risks for populations in adjacent areas because the area in question is isolated on a military base and would be isolated from the general population. Therefore, there would be no disproportionately high and adverse environmental or human health impacts on low-income or minority populations.

3.9 GROUND AND VESSEL TRANSPORTATION

The following section describes the ground and vessel transportation systems that provide access to the project area.

3.9.1 Ground Transportation

3.9.1.1 Affected Environment

Roadways in the study area include the regional highway and freeway network as well as the local streets and access roads in the immediate vicinity of NBSD (DoN 2006a; NBSD 2002). Surface streets could potentially be used as travel routes to and from the various project component sites. For example, trucks would be used to transport construction materials to the pier construction site and demolition debris, including concrete, and dredged materials to a landfill(s). The primary source for project-related truck traffic would be associated with transport of dried dredged material from the NBSD CDF to the Otay Landfill. Therefore, the following focuses on existing traffic conditions for the transport route between NBSD and Otay Landfill.

The truck route from NBSD to Otay Landfill would likely be as follows:

1. Leave NBSD via Gate 9 and head southbound on Harbor Drive;
2. Continue on Harbor Drive through Civic Center Drive and onto southbound I-5;
3. Transition onto eastbound State Route (SR) 54;
4. Transition onto southbound I-805;
5. Exit southbound 805 at Main Street;
6. Head east on Main Street through Brandywine Avenue;
7. Proceed to make left-turn onto Maxwell Road and head north to landfill entrance.

The return route would be the reverse. The characteristics of the primary roads are as follows:

Harbor Drive is a four-lane divided north-south roadway within the project area, providing two lanes of travel per direction. No bike lanes or bus stops are provided, and no parking is permitted along either side of the roadway. In the project area, the posted speed limit ranges between 40 and 45 miles per hour (mph).

Interstate 5 (I-5) is a ten-lane north-south freeway in the project area. I-5 consists of five mainlines, with auxiliary lanes provided between Civic Center Drive and SR 54. The posted speed limit is 65 mph.

State Route (SR) 54 is a six-lane east-west divided freeway in the project area. SR 54 consists of three mainlines between I-5 and I-805. The posted speed limit is 65 mph. As part of the haul route, SR 54 would provide construction trucks connectivity between I-5 and I-805.

Interstate 805 (I-805) is a north-south freeway in the project area. I-805 is an eight lane freeway north of Telegraph Canyon Road and gains an additional lane south of Telegraph Canyon Road. The posted speed limit is 65 mph.

Main Street is currently a six-lane undivided east/west roadway with a Two-Way Left Turn Lane median. Bike lanes and bus stops are provided along Main Street in both directions. The posted speed limit is set at 50 mph.

Weekday manual peak hour intersection counts were conducted as part of this assessment by LLG Engineers during the week of November 15th, 2010 while all local schools were in session. Weekday counts were conducted during the commuter AM (7:00-9:00) peak period. Because the landfill's daily hours of operation are between 7:00 AM and 4:00 PM, the PM peak hour count and analysis was conducted between 2PM and 4PM. No trucks affect the commuter peak hours of 5-6 PM. Freeway daily volumes were obtained directly from Caltrans' freeway performance measurement system that distributes real-time peak hour volumes by lane and provides a graphical representation of volumes at each station location. Peak hour volumes were collected in October 2010 because Caltrans has indicated that this is a desirable period to capture traffic as it does not have any holidays.

Existing traffic conditions for major intersections and freeway segments along the truck haul route to Otay Landfill are presented in Tables 3.9-1 and 3.9-2, respectively. As shown in Table 3.9-1, all study area intersections are calculated to currently operate at an acceptable level of service (LOS) D or better during the AM and PM peak hours. Table 3.9-2 shows that all freeway segments are calculated to currently operate at LOS D or better with the exception of I-805 SB: SR 54 to Telegraph Canyon Road, which is calculated to currently operate at LOS E –AM peak hour.

Table 3.9-1. Intersection Operations for the NBSD to Otay Landfill Haul Route.

Intersection	*Control Type*	*Peak Hour*	*Existing*		*Existing With Construction Project Traffic*		*Δ [c] Delay*
			Delay[a]	*LOS[b]*	*Delay*	*LOS*	
1. Harbor Drive/ 8th Street	Signal	AM	29.4	C	29.9	C	0.5
		PM	28.2	C	29.3	C	1.1
2. Harbor Drive/ Civic Center Drive	Signal	AM	22.6	C	23.0	C	0.4
		PM	21.7	C	21.8	C	0.1
3. Main Street/ I-805 SB Ramps	Signal	AM	36.2	D	36.7	D	0.5
		PM	37.1	D	38.2	D	1.1
4. Main Street/ I-805 NB Ramps	Signal	AM	37.5	D	38.2	D	0.7
		PM	37.1	D	38.3	D	1.2
5. Main Street/ Brandywine Avenue	Signal	AM	29.0	C	29.3	C	0.3
		PM	29.6	C	29.7	C	0.1
6. Main Street/ Maxwell Road	Signal	AM	13.5	B	16.4	B	2.9
		PM	21.7	C	23.6	C	1.9

Notes:

[a] Average delay expressed in seconds per vehicle.

[b] Level of Service.

[c] Δ denotes an increase in delay due to project.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 < 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
> 80.1	F

Table 3.9-2. Freeway Segment Operations for the NBSD to Otay Landfill Truck Haul Route.

Freeway Segment	*Direction & Number of Lanes*[b]	*Capacity*	*Existing*						*Existing with Construction Project Traffic*						*Δ*	
			Volume		*V/C*		*LOS*		*Volume*		*V/C*		*LOS*			
			AM	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Interstate 5																
Civic Center Drive to SR 54	NB Mainlines 5M + 1 AUX	11,200	1,228	4,070	0.110	0.363	A	A	1,268	4,110	0.113	0.367	A	A	0.003	0.004
	SB Mainlines 5M + 1 AUX		6,100	7,120	0.545	0.636	B	C	6,140	7,160	0.548	0.639	B	C	0.003	0.003
Interstate 805																
SR 54 to Telegraph Canyon Road	NB Mainlines 4M + 1 AUX	9,200	4,860	5,080	0.528	0.552	B	B	4,900	5,120	0.533	0.557	B	B	0.005	0.005
	SB Mainlines 4M + 1 AUX		9,110	7,490	0.990	0.814	E	D	9,150	7,530	0.995	0.818	E	D	0.005	0.004
Telegraph Canyon Road to Main Street	NB Mainlines 5M + 1 AUX	11,200	9,900	4,600	0.884	0.411	D	B	9,940	4,640	0.888	0.414	D	B	0.004	0.003
	SB Mainlines 5M + 1 AUX		8,880	6,100	0.793	0.545	C	B	8,920	6,140	0.796	0.548	C	B	0.003	0.003

Notes:

a. "M" = Mainline lane, "AUX" = Auxiliary lane.

b. 2,000 vehicles per lane per hour (main line), 1,200 vehicles per lane per hour (HOV)

LOS V/C

A <0.41; **B** 0.62; **C** 0.8; **D** 0.92; **E** 1; **F(0)** 1.25; **F(1)** 1.35; **F(2)** 1.45; **F(3)** >1.46

3.9.1.2 Environmental Consequences and Mitigation Measures

Proposed Action

The majority of the ground traffic associated with the proposed project would result from truck trips transporting dried dredged material between the NBSD CDF site and the Otay Landfill. On average, an estimated 135 truck trips per day over a period of 40 days would be required to transport the dredged sediments to the landfill. Assuming 9 hours of operation per day equates to 15 truck trips/hour. In addition to the traffic associated with transporting dried dredged materials to Otay Landfill, transport trucks would be used to remove other pier demolition material, including concrete debris that is unsuitable for re-use as an FES. Wood piles, pile stubs, chocks, and walers would be transported to an upland landfill. Recycled, steel debris would be sent to the NBSD recycling center or recycled offsite. Asphalt debris would be trucked off site to an asphalt recycler if the quantity is sufficient for recycling in a cost effective manner. If not, it would be transported by truck to a landfill. Project-related traffic associated with recycling and disposal of demolition debris, as well as traffic associated with construction activities, would be smaller compared with that of the dredged material transport traffic.

For the purposes of assessing project-related traffic impacts, the hourly average truck trips for transport of dredged material was increased by 5 trips (33 percent) to account for the additional project traffic associated with other demolition and construction activities as well as represent a possible worst-case peak hour rate. Applying a 33 percent factor of safety is the standard of practice in traffic engineering for trip generation estimates. This approach also assumes conservatively that the additional demolition and construction traffic occurs mainly along the same route as that used by the dredged material disposal truck trips. The resulting trip generation would equate to 270 average daily trips (135 in/135 out), with 40 total AM peak hour trips (20 inbound/20 outbound) and 40 total PM peak hour trips (20 inbound/20 outbound). Because these truck trips would exhibit diminished performance characteristics as compared to passenger vehicles, a standard of practice is to apply a "Passenger Car Equivalence" factor to the trip generation. A Passenger Car Equivalence factor of 2.0 was applied to the trip generation, resulting in 80 total AM peak hour trips (40 inbound/40 outbound) and 80 total PM peak hour trips (40 inbound/40 outbound). These traffic volumes (with Passenger Car Equivalence) were the basis of the analysis. For the purposes of this assessment, project-specific impacts are those impacts for which the addition of project trips results in an identifiable degradation in level of service on freeway segments, roadway segments, or intersections, triggering the need for specific project-related improvement strategies.

The differences in level of service at key route intersections due to project-related truck traffic compared to present levels are shown in Table 3.9-1. These results indicate that, with the addition of project traffic, all study area intersections would continue to operate at an acceptable LOS D or better during the AM and PM peak hours. Therefore, the project would not reduce the level of service on local intersections.

The differences in level of service at key freeway sections due to project-related truck traffic compared to present levels are shown in Table 3.9-2. Based on these results, all freeway segments would continue to operate at LOS D or better, with the exception of the listed I-805 segment, which would continue to operate at LOS E. Based on the city of San Diego's published

significance criteria, the I-805 freeway mainline segment is not considered significant because the project would add less than the maximum increase of allowable volume to capacity ratio (V/C) for a poorly operating segment. Therefore, the project would not reduce the level of service on roadways and no significant impacts would occur during the construction portion of the proposed project.

A separate Traffic Control Plan would be prepared by the construction contractor and approved by the Navy prior to the beginning of trucking activities. The Plan would specify the following:

- No oversized construction vehicles will be used on public roadways (i.e., all vehicles will comply with the size and weight limits specified in the California Vehicle Code);
- Only designated truck routes will be used; and
- Specific traffic control measures will be developed for circumstances where trucks would be temporarily stacked in the right-of-way or would generate a heavy volume of turning movements across traffic lanes (e.g., signs, delineators, and/or flaggers would be required on 8th Street at or near a gate or site access driveway).

Overall, the proposed action would result in small increases in truck volumes on selected roadways during construction activities to transport construction materials to the pier construction site and remove demolition and dredged materials to landfills. If the truck movements occurred during the peak morning or afternoon commuter periods on 8th Street near Gate 9, the impacts would be more severe. However, the required Traffic Control Plan described above would preclude peak period truck movements at this location. Thus, pier demolition and construction activities would not result in significant impacts to ground transportation.

MITIGATION MEASURES

The proposed action would not cause significant impacts to ground transportation at NBSD or the regional highway network. Therefore, no mitigation measures are proposed.

No-Action Alternative

The current ground transportation conditions at NBSD would not be affected by the No-Action Alternative. Therefore, no impacts to ground transportation would occur.

3.9.2 Vessel Transportation

3.9.2.1 Affected Environment

San Diego Bay is actively used by commercial, recreational, and military vessels. There are multiple facilities in the Bay to serve boaters, including 18 public marinas, 4 private yacht clubs, 55 boat yards, over 8,281 recreational boat slips, four U.S. Naval complexes (Naval Base Point Loma, NASNI, NAB Coronado, and NBSD) with multiple piers, a cruise ship terminal, and a ferry service.

Access to the major piers and berthing areas in San Diego Bay is via the main channel, which is clearly buoyed and charted. While there is relatively little major commercial shipping traffic

(approximately 40 cargo and cruise ships entering monthly, no more than about 5 per day), there is a large amount of recreational boating traffic. There is no formal control of the channel by the Port of San Diego; however, there is a harbor common radio channel that is voluntarily used by large ships and the Navy. The Navy has a traffic monitor at NBSD at the 32nd Street Station. This monitor is used by all Navy ships while in the harbor, providing location data and proposed vessel navigational routes. Navy ships are berthed at NBSD, NAB Coronado, Naval Base Point Loma, and NASNI.

Key elements of the water navigation system include the open bay, marine terminal, ship navigation corridor, main ship channel, Navy ship berthing/anchorage, restricted areas, boat navigation corridor, recreational craft berthing, commercial fishing berthing, and small craft anchorage/mooring. A ship navigation corridor extends from the mouth of San Diego Bay to the National City limit. The navigation corridor provides access to marine terminals, marine-related industrial areas, and military bases. The purpose of the ship navigation channel is to provide adequate draft for ship maneuverability, safe transit, and access to marine terminals, marine related industrial areas, and military bases. Pursuant to the Harbor Safety Plan (amended in 2005), ship corridors are maintained at adequate depths and widths to eliminate hazardous conflicts in the harbor among ships, small craft, and structures. Further, aquatic activities incompatible with vessel traffic in marked ship and boat channels and restricted areas are prohibited.

Marine vessel circulation in San Diego Bay is regulated by the U.S. Coast Guard navigational standards and other general navigational standards, which are enforced by the San Diego Harbor Police. Compliance with the International Rules of the Road for lighting and day markers is also required. These are general standards, however, and do not comprise a formal marine traffic system for large vessels. The main ship channel, which is maintained by the USACE, provides a depth of -47 ft MLLW and a width that ranges from 600 to 2,000 ft from the bay entrance to berthing areas on NASNI; a -47-ft MLLW depth and varying widths from 600 to 1,900 ft to the Tenth Avenue Marine Terminal; and a -37-ft MLLW depth and a width varying from 600 to 1,350 ft down the Bay to the National City Marine Terminal. Naval vessels, including cruisers and amphibious assault ships, can travel as far south as NBSD.

Boat navigation corridors are those water areas delineated by navigational channel markers or by conventional waterborne traffic movements, and are designated by their predominant traffic and general physical characteristics. Boat navigation corridors range from 6 to 21 ft in depth and provide access to the more remote areas of San Diego Bay. These channels are generally too shallow and too narrow to accommodate larger ships.

The remaining areas of open water are quite shallow, ranging in depth from 2 to 17 ft and comprise a large portion of the Bay. Shallow draft sailboats and power boats use these areas for recreation and travel.

Uncontrolled boat anchorage is allowed in the open areas of San Diego Bay except where prohibited by other uses. Ship anchorage areas for ocean-going ships are located primarily in the area north of the "B" Street Pier but include all of the navigable waters of the harbor except designated channels, cable and pipeline areas, special anchorages, and Naval Restricted Areas. Vessels anchoring in portions of the harbor, other than the areas discussed above, leave a free

passage for other craft and are prohibited from unreasonably obstructing vessel approaches to the wharves in the harbor.

The major ships using the channel, other than merchantmen (approximately 40 per month), are Navy amphibious assault ships that are homeported at NBSD (these ships are assisted by tugs between their berths and the San Diego-Coronado Bay Bridge and have steerage under pilot when they reach the berthing areas) and cruise ships that call in San Diego about 2 to 3 times weekly.

3.9.2.2 Environmental Consequences and Mitigation Measures

Proposed Action

Potential impacts on vessel transportation associated with the proposed action would be associated with vessels used during project activities (e.g., tugs, dump barges, dredges, pile drivers, work barges, etc.). These impacts are evaluated in terms of the incremental increase in marine traffic within the NBSD restricted area, but also include the movement of construction materials and debris to and from the Pier 12 and FES sites to the channel entrance.

Concrete debris from the demolition of the existing pier would be used to create two FES (Figure 2.1-1). Approximately 3 tugboat-barge trips per day for 10 days would be required to transport the approximate 13,000 cy of debris.

One round trip is expected for the dredge, and approximately 272 barge/tug trips (assuming a total disposal volume of 433,965 cy and use of double barges each filled with 800 cy of dredged material) would be required to transport the dredged material to the LA-5 disposal site. Therefore, assuming one round trip per day from the project site to LA-5, project-related barge traffic would occur over a period of 272 days.

The types and amounts of vessel traffic described above would not result in a substantial reduction in current safety levels from the proposed action as related to vessel maneuvering, vessel congestion vessel anchorages, recreational boating access, or commercial fishing activity. Further, the minimum depth from the surface for the FES would not restrict recreational boating access and sites would not be located in shipping lanes (Section 3.5 and Figure 2.1-1). Therefore, there would be no significant impacts to vessel transportation as a result of the proposed action.

MITIGATION MEASURES

Because no significant impacts on vessel traffic would occur as a result of the proposed action, no mitigation measures are proposed.

No-Action Alternative

The No-Action Alternative would not require any additional vessel traffic within San Diego Bay. Therefore, no impacts to vessel transportation would occur.

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3.10 NOISE

3.10.1 Affected Environment

This section provides information on airborne and underwater noise, including characterization of existing noise conditions in the general vicinity of the proposed project. No site-specific noise data are available for this project, but information is available for the general San Diego Bay area. Noise is defined as unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive, stationary or transient. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, time of day, and distance between the noise source (e.g., a bulldozer) and the receptor (e.g., a person or animal).

3.10.1.1 Airborne Noise

Noise levels are measured in decibels (dB), which are represented on a logarithmic scale of about 20 to 120 dB. On this scale, everyday noises range from 30 dB for a quiet room to 100 dB for a loud power lawn mower at close range. At a constant level of 70 dB, noise can be irritating and disruptive to speech; at louder levels, hearing losses can occur. A difference of 3 dB represents a doubling of sound levels in terms of energy. However, because of how we hear, it is necessary to have a 10-dB increase to be *perceived* as a doubling in sound. Noise measurements are usually on an "A-weighted" scale that filters out very low and very high frequencies in order to replicate human sensitivity. It is common to add the "A" in order to identify that the measurement has been made with this filtering process (dBA).

Because noise levels vary widely during the day, it is customary to average noise levels over a period of time. Time-averaged noise levels form the basis for land use compatibility guidelines. For instance, the term Day-Night Average Level (L_{dn}) is used to describe the average noise level during a 24-hour day with a penalty of 10 dBA added to nighttime sound levels (10 PM to 7 AM). Community Noise Equivalent Levels add a 5 dBA penalty for noise events that occur in the evening (7:00 PM to 10:00 PM), as well as a 10 dBA penalty for noise events at night (10:00 PM to 7:00 AM). Shorter measurement durations (typically 1 hour) are described as Energy Equivalent Levels (L_{eq}) indicating the total energy contained by the sound over a given sample period. The Energy Equivalent Levels for 1 hour is the energy average noise level during the hour; specifically, the average noise based on the energy content (acoustic energy) of the sound. It can be thought of as the level of a continuous noise that has the same energy content as the fluctuating noise level. The Energy Equivalent Levels for a 24-hour period (L_{eq24}) is the Day-Night Average Level / Community Noise Equivalent Levels without the penalties.

3.10.1.2 Underwater Noise

Sound propagation characteristics are different in water than in air. Sound pressure levels are calculated as a ratio of the measured acoustic pressure to a reference value. A reference level of 1 microPascal (µPa) is used for underwater sound. The standard reference range is 3.3 ft (1 m) to permit use with transmission loss measurements referenced to 3.3 ft (1 m).

Airborne sound can be transmitted into the water. However, the amount of acoustic energy directly transmitted from a source is limited due to refraction and reflection. Sound

transmission in shallow water is also influenced by reflection losses from the bottom and the surface, refraction from sound speed gradients, reflection and refraction from shallow bottom layers, and scattering from rough surfaces.

3.10.1.3 Existing Conditions and Sensitive Receptors

Land use compatibility with differing noise levels is regulated at the local level, although the federal government has established suggested land use compatibility criteria for different noise zones (Federal Interagency Committee on Urban Noise 1980). Based on the Land Use Guidelines contained in the Federal Interagency Committee on Urban Noise (1980; Table 2), residential areas and schools are considered compatible where the Day-Night Average Level is up to 65 dBA; outdoor recreational activities such as fishing and golfing are compatible with noise levels up to 70 dBA; and parks are compatible with noise levels up to 75 dBA.

The proposed project site lies outside the 65 dB noise contours generated by aircraft activity at San Diego International Airport and NASNI (DoN 1993). Ambient noise levels in the NBSD waterfront area are associated with a variety of activities. The primary noise sources are ship repair equipment used on the piers, marine terminal operations, vehicular traffic, and air traffic associated with NASNI, the U.S. Coast Guard Air Station, and San Diego International Airport. Navy and civilian personnel employed within NBSD are exposed to a diverse range of sounds associated with support of the NBSD mission. Buildings that attenuate noise on base generally limit the impact of these sounds (DoN 1993).

Measured, site-specific data are not available for baseline noise levels near the project site. However, ambient noise levels can be reasonably estimated using the methodology of the National Research Council, Committee on Hearing, Bioacoustics, and Biomechanics (NRC 1977). These estimates consider expected human activity in an urban area and are based on population density per square mile. National City has a population of approximately 57,800 persons, and encompasses approximately 9.2 square miles, resulting in a density of approximately 5,900 persons per square mile (SANDAG 2010a; National City 2007). Based on an assessment using the National Research Council (1977) methodology and the above population density, the estimated ambient noise level near the project site is 58 to 59 dBA.

The city of San Diego has a noise ordinance that limits construction noise, such as the effect of any construction noise generation that reaches any property which is zoned residential. This limit is an average sound level of 75 dB or less during the 12 hour period from 7 AM to 7 PM. The ordinance also limits construction activity outside of these hours and during certain days where it may create an excessive impact on neighboring sites (San Diego Municipal Code, 1984).

Noise in National City, adjacent to, and east of the pier replacement site, is regulated by the City's Noise Control Ordinance. National City standards indicate an allowable noise level of Day-Night Average Level 80 in heavy industrial areas, including NBSD. Noise levels in commercial areas in National City are limited to 60 dBA between 10:00 PM and 7:00 AM, and to 65 dBA between 7:00 AM and 10:00 PM. In single family residential areas (Type I residential areas), allowable noise levels are Day-Night Average Level 45 between 10:00 P.M and 7:00 AM and Day-Night Average Level 55 between 7:00 AM and 10:00 PM. Noise levels emanating off-site during construction activities in National City may not exceed 60 dBA on weekdays and 50 dBA on Sundays and holidays in residential zones at city boundaries (National City Municipal Code

2001). However, because construction noise is considered to be temporary and intermittent under these types of ordinances, noise limits in other areas, such as residential, are also allowable up to 60 dBA on weekdays. Therefore, the noise limit during weekdays for Pier 12 project activities is 60 dBA, as applied in Section 3.10.2 for comparisons with calculated noise levels at various receptor points. The noise standard that is applicable to the Pier 12 project relates to noise emanating off-site, and considers existing background noise levels. As discussed in Section 3.10.2.1, to assess project-related impacts, noise levels generated off-site by construction activity were not added to estimated ambient noise levels because city ordinances specify separate limits for each.

A number of sources of underwater sound exist in the vicinity of the project site. Sources of naturally caused underwater noise include wind, waves, precipitation, and biological sources (such as shrimp and fish). Noise derived from biological organisms can be absent or dominant over narrow and broad frequency ranges. Precipitation can contribute up to 35 dB to the existing sound level, and increases in wind speed of 5 to 10 knots can cause a 5 dB increase in ambient ocean noise across most frequencies (Urick 1983). The highest noise levels occur in nearshore areas where the sound of surf can increase underwater noise levels by 20 dB or more within 200 yards from the surf zone in the 200 Hz to 2 kHz regime (Wilson et al. 1985). In addition, wakes from boat traffic can cause breaking waves in the nearshore zone.

Small powerboats generate peak narrow band sound pressure levels of 150 to 165 dB at 3 feet in the 350 to 1,200 Hz region, with sound pressure levels of 148 dB re: 1µPa at 3 feet (Barlett and Wilson 2002). Fishing vessels can generate peak spectral densities of 140 dB re: 1µPa at 3 feet in the 250 to 1,000 Hz regime (Hildebrand 2004). Underwater sound from human activities includes ship traffic noise, use of sonar and echo sounders in commercial fishing to locate fish schools, industrial ship noise, and recreational boat use. Ship and small boat noise comes from propellers and other on-board rotating equipment. Other sources of underwater noise at industrial waterfronts could come from cranes, generators, and other types of mechanized equipment such as pile drivers on wharves or equipment on the adjacent shoreline.

Two common metrics used to measure underwater sound are the peak sound pressure level (Peak) and the root mean square sound pressure level. The former is the instantaneous maximum positive or negative pressure observed during the impulse; the latter represents the mean square pressure level of the pulse. Baseline data on ambient noise levels are not available from the project region, however, measurements of ambient noise over a one-month period in northern San Diego Bay suggest a range from about 64 to 87 dB re: 1 µPa (Finneran et al. 2005). Details pertaining to potential noise effects on marine organisms in the project region are presented in Section 3.5.

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

Airborne Noise

Project activities primarily would involve demolition and construction on weekdays during daylight hours using standard equipment ranging from trucks and cranes to pile drivers, all of which would create noise. To assess potential impacts of this noise, estimated on-site equipment usage (Appendix A) was modeled using the Federal Highway Administration's

Roadway Construction Noise Model (U.S. Department of Transportation [USDOT] 2006). Because the National City Noise Ordinances contain specific stipulations for construction noise, the project-related noise assessment focuses on the output of the *Roadway Construction Noise Model*. The results calculated by the model are conservative. Noise levels in the model originated from data developed by the USEPA, and were refined using an "acoustical usage factor" to estimate the fraction of time each piece of construction equipment would be operating at full power (i.e., its loudest condition) during the project (USDOT 2006).

The *Roadway Construction Noise Model* collects acoustic data at identified receptor points, and reports equivalent noise levels (Leq) at those points. For this project, seven points landside of the site and at varying distances from the site-center were identified as potential sensitive receptors. These points represent areas with a range of land uses that could be sensitive to elevated noise levels. Residences, schools, and parks are considered noise sensitive land uses. To consider potential noise impacts, three residential areas, three schools, and a park located in National City were identified for specific assessment. Based on standard noise modeling protocols, these points were randomly selected, but the locations and numbers of points are considered appropriate for this assessment because they reflect representative land uses in the proximate project area. In general, the points describe an arc to the south-east, east, and north-east around the project site. The residential areas ranged from 0.7 to 1.0 miles (1.1 to 1.6 km) from the construction area. The residential areas also range from 0.07 miles (0.12 km) to 0.7 miles (1.2 km) east of Interstate 5 and are currently subject to vehicular noise levels in the 60 to 70 dB range. The schools ranged from 0.9 to 1.4 miles (1.5 to 2.3 km) from the site. The park is 1.2 miles (1.9 km) from the site.

Expected noise levels from project-related construction activities at the seven representative land use points are listed in Table 3.10-1. Model results indicate that noise levels at the receptor points would be less than the construction ordinance limit of 60 dBA. The applicable National City noise ordinances differentiate between "normal" ambient noise levels and noise emanating off a construction site. Consistent with the *Roadway Construction Noise Model* methodology used for this assessment, the ambient noise and construction noise are not added as a cumulative level for comparisons to the noise ordinance. Because modeled construction-related levels would not exceed National City noise ordinances, no significant impacts would result from implementation of the proposed action.

Table 3.10-1. Noise Levels at Receptor Points in National City Based on Pier 12 Construction Activities. The Daytime Weekday Construction Ordinance Limit is 60 dBA.

Receptor Point	*Distance*		*Estimated Ambient Noise*	*Construction-Related Noise*
	Miles	*Kilometers*		
Residential (W 20th St & Wilson Ave)	0.7	1.1	60 – 70	59.4
Residential (W 17th St & Wilson Ave)	0.8	1.3	60 – 70	58.6
Residential (West Plaza Blvd & Hoover Ave)	1.0	1.6	60 – 70	56.9
National City Middle School	1.4	2.3	58 – 59	53.6
St. Mary's School	1.3	2.1	59 – 59	54.1
Kimball School	0.9	1.5	58 – 59	57.6
Kimball Park	1.2	1.9	58 – 59	55.1
Source: USDOT 2006				

Underwater Noise

Underwater noise would be generated by pile driving, vessel and boat traffic, and construction equipment. Underwater noise transmission is highly variable and site-specific because it is strongly influenced by the acoustic properties of the bottom and surface as well as by variations in sound speed within the water column. Pile driving would be the greatest source of temporary noise from the Pier 12 project, but military and civilian (construction) vessels and equipment would also represent sources of underwater sound in the project area. Sound pressure levels associated with pile driving depend on the size and composition of the piles, the method of installation, and for impact driving the size of the hammer. Based on measurements at other in-water construction sites, impact driving concrete piles could generate peak sound levels of approximately 185 to 188 dB_{PEAK} re: 1µPa and sound exposure levels of approximately 160 to 166 dB re 1µPa at a distance of 33 feet (10 m) (Illingworth and Rodkin 2007). Vibratory pile driving typically produces lower noise levels than impact hammers, although empirical sound data for cement piles are not available (Illingworth and Rodkin 2007). The peak noise levels that would be generated during construction of the new Pier 12 cannot be specified because the type of pile driving equipment that would be used is uncertain prior to completion of construction design plans. Sound attenuation underwater near the project site would likely follow a practical spreading loss model of 4.5 dB loss in the sound level per doubling of distance from the source (e.g., 19 $\log_{10}$ [range/reference range]), in which this attenuation occurs at this same rate for all frequencies.

There are no mandatory public regulations regarding safe human underwater exposure limits for noise; however, internal Naval Submarine Medical Research Laboratory (2002) guidance for human divers states that peak sound levels above 154 re: 1 µPa can result in human physiological impacts (changes in breathing frequency and heart rate) and sound pressure levels (SPL) above 200 dB re: 1 µPa would result in physiological damage. The U.S. Navy Diving Manual prohibits exposure of un-hooded Navy divers to sound pressure levels in excess of 200 dB re: 1 µPa, and further prohibits exposure of Navy divers to levels above 215 dB re: 1 µPa for any reason (DoN 2008). Sound pressure levels from the proposed action would be less than these upper limits, however, since the project site is a military facility with restricted public access, underwater noise associated with the pier construction would not affect public health and safety and any Navy personnel would be limited in exposure based on Navy policy.

Pile driving could temporarily disturb fish, marine mammals, and sea turtles in the immediate vicinity of the project site; these potential effects are discussed under marine biological resources in Section 3.5.

Mitigation Measures

Since no significant impacts are anticipated, no mitigation measures are required.

3.10.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes from existing conditions. Industrial activities currently being conducted in the area would continue, and the area's acoustical environment would remain unchanged. Therefore, there would be no noise impacts associated with the No-Action Alternative.

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3.11 AESTHETICS AND VISUAL RESOURCES

3.11.1 Affected Environment

This section addresses the aesthetics, or visual resources, associated with the proposed action at NBSD. The aesthetic quality of an area is evaluated by the extent that important visual resources can be seen from view corridors (vantage points), or experienced from roadways, parks, or buildings (public and private). Visual resources consist of topographic features such as landforms and bodies of water, and man-made features such as buildings, bridges, and recreational areas if they are inherent to the structure and function of the landscape. Landscape character is studied to determine whether changes in visual character could occur and whether such potential changes are compatible with an affected setting or would noticeably contrast with it. The significance of a change in visual character is influenced by social considerations, including public value placed on the resource, public awareness of the area, and general community concern for the viewscape associated with an area.

3.11.1.1 Project Vicinity

The project area is located within the San Diego Bay area, which is an important visual resource (DoN 2006a; SANDAG 2007a). Surrounding topographic features include the San Diego city skyline and several man-made features that provide interesting aesthetic amenities in the project region, such as the San Diego-Coronado Bay Bridge, historic Hotel Del Coronado, Coronado Cays condominium development on the Coronado Peninsula, and marine industrial areas including the San Diego Port Tenth Avenue Marine Terminal, National City Marine Terminal, and National Steel and Shipbuilding Company (SANDAG 2007a).

San Diego Bay is characterized by several different land uses that provide for a diverse visual character along the shoreline and from which continuous, panoramic views across the Bay are observed (SANDAG 2007a). These include (1) commercial and recreational uses along the Shelter Island Peninsula and Municipal Yacht Harbor, Harbor Island Peninsula, and the inner shoreline of the Spanish Landing Park area; (2) Broadway Pier and the Embarcadero Marina Park north of the San Diego-Coronado Bay Bridge, representing a variety of pedestrian-oriented activities; (3) residential uses in Coronado and in the Coronado Cays marina development to the south; (4) the Coronado Golf Course; (5) the San Diego-Coronado Bay Bridge; and 6) military and recreational uses along the Silver Strand.

3.11.1.2 Pier 12 Project Site

The Pier 12 project site is located along the waterfront in the southern portion of the NBSD pier complex, between Piers 10 and 13 (Figures 1.1-1 and 1.1-2). The ship berthing piers in this area are part of the viewscape from Silver Strand, Coronado Cays, San Diego/Coronado Bridge, and northern areas of NBSD. However, the Pier 12 project area is most visible to military personal, recreational boaters, and commercial ship traffic. The visual qualities of this setting are associated with military and general maritime industrial activities. The FES sites would be located in the Central and Outside Ballast regions of the Bay (Figure 2.1-1), but would be subtidal and, therefore, not visible from the surface. No aesthetically interesting topographic features, landscaping, or architectural amenities exist at the Pier 12 or FES sites.

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

Short term impacts from the proposed action on the aesthetics and visual resources would result from the presence of surface support vessels (e.g., work/ support barges, a barge-mounted crane, and tug boat), work trucks, and other construction equipment required to perform demolition of the existing Pier 12, associated dredging, construction of the new Pier 12 structure, and construction of the FES. Construction equipment would be visible to military personal working near Pier 12, boaters in San Diego Bay, and from multiple view corridors around San Diego Bay. However, construction activities would be short-term (estimated to be about 24 months) and for Pier 12 would occur in a developed area that is accessible only to military personnel. After construction is complete, the project area would be visually consistent with the current marine-industrial and/or military activities that take place at the Pier 12 and FES sites and adjacent areas. Therefore, the proposed action would not result in significant changes in the visual quality and character of the area, and no significant, long-term visual impacts would occur.

Mitigation Measures

Significant aesthetic impacts would not occur as a consequence of the proposed action; therefore, no mitigation measures are proposed.

3.11.2.2 No-Action Alternative

Under the No-Action Alternative, existing aesthetic qualities and visual resources would not be modified; therefore, no impacts would occur.

3.12 CULTURAL RESOURCES

3.12.1 Affected Environment

Cultural resources are districts, buildings, sites, structures, areas of traditional use, or objects with historical, architectural, archeological, cultural, or scientific importance. They include archeological resources (both prehistoric and historic), historic architectural resources (physical properties, structures, or built items), and traditional cultural resources (those important to living Native Americans for religious, spiritual, ancestral, or traditional reasons). Maritime cultural resources can include submerged prehistoric sites, shipwrecks and associated debris, and historic materials that were intentionally dumped or lost during historic use of San Diego Bay and its shoreline.

The National Historic Preservation Act establishes national policy for protecting significant cultural resources that are defined as "historic properties" under 36 CFR 60.4. National Historic Preservation Act Section 106 (36 CFR §800) requires that federal agencies consider and evaluate the effect that federal projects may have on historic properties under their jurisdiction. Only significant cultural resources are considered for potential adverse impacts from a federal action.

3.12.1.1 Prehistoric and Historic Setting

Coastal environments were one of the first habitats settled by humans in California, with the oldest archeological sites in coastal San Diego dating between 8,000 and 9,000 years ago. The earliest cultures in the San Diego area focused on hunting, while later groups added more plant foods and marine resources to their diet. Economic intensification continued throughout prehistory, culminating in the ethnographic Tipai culture that was first encountered by Spanish explorers in the 1540s (Luomala 1978).

Historic activity around San Diego Bay initially was related to the sea otter and whaling industry and the hide and tallow trade. These activities occurred primarily from the late 1700s to the mid-1800s in northwest San Diego Bay. Historic shipping traffic and maritime activity was confined to the center (natural channel) of the Bay prior to artificial dredging, such as the major dredging projects conducted in the 1930s.

The U.S. Government first acquired ownership of land under NBSD in 1919. It was used to establish the U.S. Destroyer Base, San Diego in 1922 with a mission to upkeep and preserve decommissioned World War I destroyers. In the 1940s, additional land was acquired, including the east side of the station for barracks and community support, while the southern pier area (including the proposed project area) was developed to mothball a reserve fleet of decommissioned ships (DoN 2006a). The station name changed in 1943 to U.S. Naval Repair Base, and again in 1946 to Naval Station, San Diego. Due to its abundant waterfront assets, deep water harbor, and close proximity to other key military installations, NBSD continues to play a vital role in its ability to accommodate and support numerous Fleet ships and commands.

3.12.1.2 Definition of the Area of Potential Effects

The area of potential effects of an undertaking is defined at 36 CFR 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the

character or use of historic properties, if any such properties exist." The area of potential effects for the land-based portion of the project site measures approximately 15,000 square feet (0.3 acres), and includes a 50-ft construction buffer around the small (50 ft by 50 ft) shoreside excavation for the pier base. The area of potential effects for the in-water portion of the project site measures approximately 1,740,600 square feet (40 acres), and includes the footprint for the existing and new replacement piers, the proposed dredging area, and a 50 ft buffer area around the dredge footprint (see Figure 2.1-1). Construction vehicle parking and staging activities would occur within a paved area adjacent to the existing pier, and the laydown and CDF sites would be located at the mole pier adjacent to the Paleta Creek Channel. No ground disturbance would be associated with these activities.

The FES sites are located at the mouth of San Diego Bay (South Ballast Point) and off Coronado (Chapter 2 and Appendix A). These sites are subtidal. A portion of the dredged material would be disposed of at the LA-5 ocean dredged material disposal site, and the remaining portion would be disposed of at the Otay Landfill. Construction debris would be trucked to a designated landfill or recycling center, except for the suitable concrete debris, which would be used for creating the FES. An independent reassessment by users (i.e., the Navy) is not required for either the ocean disposal site or designated landfill/recycling center; therefore, these disposal sites are not included in the APE and are not discussed further.

3.12.1.3 Cultural Resources at Pier 12

The bay bottom within the in-water portion of the area of potential effects has been dredged previously, so that any submerged cultural resources would have inadvertently been destroyed and their integrity lost. Therefore, no maritime (submerged) cultural resources are recorded or expected from within the area of potential effects. Two prehistoric archeological sites have been identified in other portions of NBSD (DoN 2006a), but they are not located within the area of potential effects and would not be disturbed by the proposed action.

In 1999, the Navy evaluated the National Register of Historic Places eligibility of all NBSD buildings and structures built between 1946 and 1989, including Pier 12, and found that none of these met the criteria for listing on the National Register of Historic Places (DoN 2006a). There is one historic district (Naval Base San Diego Historic District) and two individual buildings that have been identified as eligible for inclusion on the National Register of Historic Places, but these are located in the northern portion of the base, the closest being about 1 mile north of the area of potential effects.

3.12.2 Environmental Consequences

Section 106 of the National Historic Preservation Act requires that federal agencies take into account the effects of their proposed actions on historic properties. Impacts on cultural resources are considered significant if a historic property, as defined under 36 CFR 60.4, would be physically damaged or altered, would be isolated from the context considered significant, or would be affected by project elements that would be out of character with the significant property or its setting. The proposed project area would fall under the coverage of the San Diego Metropolitan Area Programmatic Agreement (Metro Area PA) executed in February 2003 between NRSW, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer, which outlines procedures for complying with Section 106 requirements.

The Metro Area PA provides for NRSW determinations of a project's area of potential effects, identification of potentially affected historic properties, and assessment of "no historic properties affected" and "no adverse effect" without further consultations with California State Historic Preservation Officer that normally would be required under 36 CFR 800.

3.12.2.1 Proposed Action

No structures affected by the proposed action are considered to be a historic property under 36 CFR 60.4, and no archeological sites are recorded or expected in the area of potential effects. The proposed action, therefore, would not affect areas that contain or are likely to contain significant archeological resources, historic architectural resources, or traditional cultural resources. Therefore, significant project-related impacts would not occur.

In conformance with Stipulation 8A of the Metro Area PA, NRSW has determined that the proposed action would not affect listed, contributing or eligible National Register of Historic Places properties. Consistent with 36 CFR 800.4(d)(1), NRSW has accordingly made a determination of "no historic properties affected" for the proposed action. In accordance with Stipulation 8A of the Metro Area PA, no further compliance (i.e., Indian tribal consultation, monitoring, or a data recovery [mitigation] strategy) under Section 106 or 36 CFR 800 would be required.

Mitigation Measures

Because no significant cultural impacts would occur as a result of the proposed action, no mitigation measures are proposed.

3.12.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no facility improvements or dredging and, therefore, no construction or ground disturbances would be required. No impacts on cultural resources would occur.

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3.13 PUBLIC FACILITIES ACCESS/COASTAL ZONE

3.13.1 Affected Environment

3.13.1.1 Access Restrictions

NBSD is owned and operated by the Navy, and access is controlled (NBSD 2002). The project site and surrounding waters are considered restricted areas, where access is prohibited or limited to provide security for government property and to provide protection to the public from risks of disturbance or damage. No anchoring or water contact sports (e.g., swimming, fishing, or waterskiing) are permitted. Access to the proposed project area is restricted to military personnel, DoD civilians, and authorized contractors.

3.13.1.2 Coastal Zone

The Coastal Zone Management Act (CZMA) of 1972 (16 USC Section 1451) encourages coastal states to be proactive in managing coastal zone uses and resources. CZMA established a voluntary coastal planning program and participating states submit a Coastal Management Plan to the National Oceanic and Atmospheric Administration for approval. Under the CZMA, federal agency actions within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state management programs. Each state defines its coastal zone in accordance with the CZMA. Excluded from any coastal zone are lands the use of which by law is subject solely to the discretion of the federal government or which is held in trust by the federal government (16 USC 1453). Accordingly, although NBSD land is federal government property and therefore excluded from the coastal zone, the Navy nonetheless conducted an effects analysis as part of its determination of the action's effects for purposes of federal consistency review under the CZMA. This was done to factually determine whether the proposed action (even if conducted entirely within a federal enclave) would affect any coastal use or resource.

3.13.2 Environmental Consequences

3.13.2.1 Proposed Action

The Navy has analyzed the potential effects of the proposed action by evaluating reasonable foreseeable direct and indirect effects on coastal uses and resources. The Navy has determined that the proposed action would not adversely affect coastal resources. A copy of the Coastal Consistency Negative Determination is provided in Appendix C.

Mitigation Measures

Public access impacts would not occur as a result of implementation of the proposed action; therefore, no mitigation measures are proposed.

3.13.2.2 No-Action Alternative

Under the No-Action Alternative, as with the proposed action, the existing restrictions to access the sea in the NBSD area would remain in place; therefore, the No-Action Alternative would not adversely affect coastal resources.

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3.14 SAFETY AND ENVIRONMENTAL HEALTH

This section addresses health and safety issues related to the proposed action at NBSD. Safety and environmental health issues generally include health and safety hazards and disposal issues that are inherent in construction areas with potential soil and groundwater contamination; dredging and disposal of potentially contaminated sediments; construction and operations in the vicinity of existing ordnance storage areas; disposal of creosote-coated piles; and hazardous materials use during operations. It is the policy of the Navy to plan for every possible precaution in the planning and execution of all operations that occur onshore or offshore to prevent injury to humans or damage to property.

3.14.1 Affected Environment

All operations at NBSD are governed by the Navy Occupational Safety and Health program.

3.14.1.1 Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)

In 1997, EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, was issued. This order requires each federal agency to "…make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall…ensure that its policies, programs, activities and standards address disproportionate risks to children…"

NBSD is a restricted base (NBSD 2002), and no children would be expected at or in the vicinity of the project area. The areas adjacent to the proposed project site are military/industrial in nature. No facilities frequently used by children, such as schools or day care centers, are located in the immediate project area. Family housing units are located off the main base. The Child Development Center, which provides on-base child care services, is located over 1.5 miles (2.4 km) north of the project area.

3.14.1.2 Hazardous Materials and Waste

The Navy has implemented a strict Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all of its facilities. These programs are governed by Navy-wide OPNAVINST 4110.2 and OPNAVINST 5090.1C, respectively. NBSD has implemented these instructions, and all actions required by the proposed action would be carried out in accordance with these programs. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes. For example, non-hazardous materials are substituted for hazardous materials whenever practicable, processes are changed to those that do not employ hazardous materials, and care is taken to avoid contaminating non-hazardous materials with hazardous materials. Universal Wastes is a subset of hazardous waste, and includes items such as mercury switches, alkaline batteries, and fluorescent light bulbs which would be managed according to regulation. Effective February 2006, all wastes, regardless of origination, must be managed as universal wastes or hazardous wastes.

The Navy Installation Restoration Program is responsible for identifying contaminant releases; considering risks and assessing impacts to human health and the environment; and developing

and selecting response actions when it is likely a release could result in an unacceptable risk to human health and the environment. Twenty-two Installation Restoration Program sites have been identified at NBSD (DoN 2006a), including one site (Site 1; Former Ship Repair Basin) that abuts the landside end of the proposed Pier 12 area. Site 1 is currently under investigation by the Navy under its Installation Restoration Program (D. Belton, personal communication 2010) (see Section 3.2 for additional details).

The Navy conducted testing of the sediments proposed for dredging under the proposed action, according to protocols in the USEPA/USACE Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual (known as the "Green Book") (USEPA-503/8-91/001). Results of the sediment testing indicate that most of the dredged material would be suitable for disposal at a designated ocean disposal site, whereas a portion (up to 63,805 cy) would be disposed of at the Otay Landfill in Chula Vista, California. None of the dredged material would be classified as hazardous waste.

3.14.1.3 Ordnance Safety Zones

Explosive Safety Quantity Distance (ESQD) arcs define the acceptable distance between ordnance storage and use facilities and habitable areas, and are regulated by the DoD Ammunition and Explosives Safety Standards (DoD 6055.9-STD, July 1999) and Naval Sea Systems Command OP 5 Volume 1, 7th Revision. Quantity distance requirements and permissible storage capacities are established by Naval Sea Systems Command and approved by the DoD Explosives Safety Board.

The handling of explosive materials on board ships berthed at NBSD, as well as associated pierside activities requiring the handling of explosives, has the potential to affect individuals living or working adjacent to this activity. The explosives limit for Pier 12 is 1,500 pounds net explosives weight of Class/Division (C/D) 1.1, C/D 1.2.1 (with no maximum credible event restriction), 3,000 pounds of C/D 1.2.2 and C/D 1.3, and mission-essential quantities of C/D 1.4 material. The existing ESQD arc for Pier 12 is a 1,250-foot radius arc extending from the end of the existing pier structure (DoD Explosives Safety Board memo DDESB-KO of 7 January 2004). Similar ESDQ arcs are associated with adjacent Piers 10 and 13 (note that for security reasons ESQD arcs are not shown on any figure in this EA). No habitable development may occur within these areas (DoN 2006a).

3.14.1.4 Other Health and Safety Requirements

All proposed construction and operation activities at NBSD must meet the requirements of EO 13123 (Greening the Government through Efficient Energy Management) 64 Federal Register 30851 (1999), EO 13148 (Greening the Government through Leadership in Environmental Management) 65 Federal Register 24595 (2000), and EO EO13423 (Strengthening Federal Environmental, Energy, and Transportation Management) 72 Federal Register 2763 (2007). These requirements are intended to ensure, whenever feasible, that pollution would be prevented or reduced at the source; pollution that cannot be prevented would be recycled in an environmentally safe manner; pollution that cannot be prevented or recycled would be treated in an environmentally safe manner; and disposal or other releases to the environment would be employed as a last resort.

3.14.2 Environmental Consequences

3.14.2.1 Proposed Action

Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)

According to EO 13045, environmental health risks and safety risks are defined as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)." The proposed action is located on NBSD, which is a restricted industrial area that is off-limits to children. Therefore, significant impacts associated with environmental health risks and safety risks to children would not occur.

Hazardous Materials and Waste

The project site is located adjacent to IR Site 1, which is the location of former ship repair basins. As discussed in Section 3.2, the proposed action would require construction activities (e.g., excavation and/or trenching) within IR Site 1, Basin 4. Construction activities would not result in releases of any contaminated materials from the site because the Navy would require the contractor to develop and implement engineering controls and procedures that would ensure the water tight integrity of the quaywall is maintained, and that hazardous materials contained by the quaywall are not released. Therefore, no significant impacts to surface water quality would result from the proposed action.

The Navy has conducted a study to examine the potential for the proposed project to negatively impact the structural integrity of the quaywall relative to hazardous material contained by IR Site 1 (DoN 2009). As a result of this study, a Structural Engineer has made a determination that construction of a new pier seaward of the quaywall should not have undesirable consequences to the quaywall. The study report is included as Appendix D.

Shoreside excavation for the pier base would be completed using standard construction equipment, including an excavator and dump trucks. The excavation area would be approximately 50 ft by 50 ft and 10 ft deep. The Navy would require the contractor to develop and implement engineering controls and procedures that would ensure the water tight integrity of the quaywall is maintained, and that hazardous materials contained by the quaywall are not released into San Diego Bay. Work within the basins would be performed under the oversight of a Certified Industrial Hygienist. The Navy would further require a site specific Health and Safety Plan be developed that addresses and mitigates contaminants known to be within IR Site 1. The Health and Safety Plan would be signed by the Certified Industrial Hygienist and submitted for review to the Navy Environmental Health Center. The Health and Safety Plan would be implemented by the contractor during the field activates. Any personnel who could potentially come into contact with the material contained within IR Site 1 would be properly trained and the appropriate level of protective clothing/equipment would be worn. Therefore, there would be no significant health and safety issues related to IR Site 1.

Prior to demolition, abatement of any existing lead paint and asbestos would be performed by a licensed abatement contractor. Chemically-treated, timber pile moorings (also known as Treated Wood Waste) would be removed during demolition of the existing pier and related

mooring structures, as part of the proposed action. These pilings would be replaced with concrete or composite pilings, as Treated Wood Waste is a potential source of polcyclic aromatic hydrocarbons to San Diego Bay. The removed pilings would be managed as either hazardous waste at a Class I landfill or special solid waste at a Class II or Class III landfill that meets specific criteria, depending on analytical results of samples collected from the Treated Wood Waste. The construction contractor would sample the waste, and the Facility Engineering and Acquisition Division would be notified of the test results. Handling and disposal of Treated Wood Waste associated with the proposed action would comply with the applicable standards (Title 22, CCR, Section 67386.6). As a result, there would be no significant health and safety issues related to disposal of chemically-treated, timber pile moorings. All universal wastes also would be managed according to applicable regulations.

Dredging to a depth of -37 ft (-11.3 m) MLLW in berthing and approach areas for the proposed, action would be conducted to accommodate modern Navy ships such as deep draft-power intensive vessels. The total estimated volume of dredged sediment would be 479,125 cy (366,317 cubic meters). All dredged material disposal operations performed for the proposed action would comply with Clean Water Act Section 404 and be in accordance with a dredging permit issued by the USACE, and a Clean Water Act Section 401 water quality certification from the San Diego RWQCB, as well as the specific waste acceptance guidelines issued by the operator of the Otay Landfill. Therefore, there would be no significant health and safety issues related to disposal of dredged sediments. See Section 3.4, Marine Sediments, Bathymetry, and Water Quality for additional information.

A safety and environmental health concern associated with dredging bay sediments is that munitions may be present, which could represent an explosive safety hazard. However, this concern would be minimal because the potential hazard can be effectively managed by setting up and following explosive safety procedures to train and protect workers. Safety hazards from munitions in dredged sediment would be addressed by training the onsite dredge project workers. Explosive Ordnance Disposal Units are the Navy experts for disposal of waste military munitions. For dredging projects, Explosive Ordnance Disposal technicians would train onsite workers to recognize and identify different types of ordnance and to observe explosive safety standard operating procedures. In addition, an explosive safety plan would be developed and implemented, assuring that all explosive safety standards of DoD Directive 6055.9, "DoD Ammunition and Explosive Safety Standards," are upheld. If unexploded ordnance is encountered during dredging, the construction contractor must stop work and report the situation to the Commanding Officer of the Naval Ordinance Safety and Security Activity and to the NBSD Safety Officer.

Ordnance Safety Zones

Demolition, construction, and dredging activities associated with the proposed action would occur within three ESQD arcs associated with explosive handling at Piers 10, 12, and 13,. However, no habitable development would occur under the proposed action. After completion of the new Pier 12, vessel berthing and associated explosive handling would occur. As part of the proposed action, the existing ESQD arc that surrounds Pier 12 would be extended. The new ESQD arc would have the same radius as the existing arc (1,250 feet [381 m] as measured from the outer corners of the pier and a point 1,250 feet in from the shoreline). The only difference in the ESQD arc would be caused by the increased width of the new pier from 30 to 117 feet. This

would extend the arcs laterally by 87 feet north and south over the other piers. There would be no change in shoreward or bayward (westward) directions. The ESQD arc would not extend onto shore, and would not extend any farther out than the existing piers. Extending the ESQD arc would not change the pierhead bulk line, which corresponds to NBSD's ownership boundary.

Changes in facilities that modify established ESQD arcs require an explosives safety certification and approval of the DoD Explosives Safety Board, in accordance with guidance from NAVSEA OP 5 (Chapters 7 and 8). Explosives Safety Site Approvals, including modifications to existing explosives site approvals, are submitted via a web-based approval process (WebSAR) (L. Morales, personal communication 2007). The Navy submitted a site approval package (SAR N-021, dated 7 January 2004) to Naval Ordnance Safety and Security Activity. The site approval request was modified (12 December 2005) to reflect the revised dimensions of the replacement pier and the associated ESQD arc corresponding to the greater width of the pier. The site approval request was approved by DoD Explosives Safety Board (1 May 2006) with the conditions that the new ESQD arc does not encumber additional facilities and explosives limits and conditions remain unchanged. Therefore, significant impacts associated with safety risks would not occur.

Other Federal Health and Safety Requirements

The Navy uses the U.S. Army Corps of Engineers Safety Manual (EM-385) exclusively on construction projects, and enforces standards and holds contractors accountable. All proposed requirements of EO 13123 (Greening the Government through Efficient Energy Management), EO 13148 (Greening the Government through Leadership in Environmental Management) and EO 13423 (Strengthening Federal Environmental, Energy, and Transportation Management) would be specified in construction contractor contracts and implemented with standard best management practices associated with the proposed action. Special construction features for the new pier would include installation of a stormwater collection system with an oil/water separator to meet current NPDES permit requirements. Project operations would similarly be conducted in accordance with an NPDES permit, which includes a storm water pollution prevention plan. In addition, operations would be completed in accordance with the Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all of its facilities. NBSD has implemented these instructions, and all actions required by the proposed action would be carried out in accordance with these programs. Therefore, significant impacts associated with environmental health risks would not occur.

Mitigation Measures

No significant impacts would occur as a result of implementation of the proposed action; therefore, no mitigation measures are proposed.

3.14.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no facility improvements or dredging; therefore, no construction or ground disturbances would be required. The existing pier would continue to degrade until all activity is restricted due to deteriorated and unsafe conditions. Continued degradation of the structure would not likely affect hazardous materials or other

components of safety and environmental health risks discussed above; therefore, no impacts would occur.

3.15 UTILITIES

3.15.1 Affected Environment

Existing utilities in the project area include potable water, a storm drain system, wastewater treatment services, solid waste services, electricity, and communication systems (NBSD 2002; DoN 2006a). Water, sewer, and electrical services are provided to NBSD by various agencies. NBSD utility systems are maintained by NAVFAC Southwest Public Works (DoN 2006a). Some utilities used by NBSD are shared by adjacent jurisdictions including the Port of San Diego; the cities of San Diego, Coronado, Chula Vista, and National City; and the U.S. Marine Corps. Therefore, demand on these utilities must be considered in a regional context.

3.15.1.1 Water Supply

NAVFAC Southwest operates and maintains internal water distribution systems for domestic use and fire protection at NBSD, including potable water distribution along most piers (DoN 2006a). The Navy purchases potable water from the city of San Diego, which is delivered to NBSD through several different connections (DoN 2006a). The city of San Diego in turn receives water from the San Diego County Water Authority, a member agency of the Southern California Metropolitan Water District. Potable water is supplied to the piers through service manifolds that include shut-off valves, meters, backflow preventers, and hose adapter fittings through a looped water distribution system (DoN 2006a).

3.15.1.2 Storm Drainage Systems

NBSD maintains a gravity stormwater drainage system that includes gravity system lines, culverts, and drainage channels. Through this system, stormwater runoff is discharged into San Diego Bay, Chollas Creek, and Paleta Creek (DoN 2006a). Stormwater discharge is regulated by the NPDES Storm Water Program in compliance with the Clean Water Act. NBSD is currently covered under San Diego RWQCB, Water Quality Order No. R9-2009-0100 (adopted 12 August 2009), NPDES General Permit Number #CA0109169. Stormwater runoff on Pier 12 is controlled by a series of storm drains that discharge into San Diego Bay (R. Chichester, personal communication 2008).

3.15.1.3 Sewage Treatment

Sewage effluent generated on NBSD is transported via pipe to the Point Loma Wastewater Treatment Plant, which treats over 160 million gallons per day (City of San Diego 2010c). The Point Loma Treatment Plant has a capacity of 240 million gallons per day (City of San Diego 2010c). Sanitary sewage is delivered via pipelines to the sewer system from a station system maintained and operated by NAVFAC Southwest Public Works (DoN 2006a).

Most ships at NBSD are equipped with collection, holding, and transfer systems to offload waste into the wastewater system operated and maintained by NAVFAC Southwest Utilities. Several piers at NBSD have pump stations that transfer wastewater to sewer lines onshore (DoN 2006a).

3.15.1.4 Solid Waste Disposal

Non-hazardous solid waste and potentially recycled materials are separated at the base. Non-recyclable material is transported to the city of San Diego's Miramar landfill, while recyclable material is taken to the NBSD recycling center (D. Manjarrez, personal communication 2008).

The Navy has partnered with the city of San Diego to assist in extending the life of landfills and to meet solid waste reduction and diversion goals. The Navy has implemented policy and procedures in the Navy's Waste Management Plan, San Diego Metro Area (DoN 2007a) to maximize the diversion of materials entering the landfills, particularly construction and demolition debris. The Navy's goal is 40 percent municipal solid waste diversion from landfills (J. Sandoval, personal communication 2007). The Navy's diversion goal for construction and demolition debris for the proposed action is 52 percent. Additional Navy guidance on integrated solid waste management plans and qualified recycling programs is provided on OPNAVINST 5091.1C.

3.15.1.5 Electrical Power

Electrical power is purchased from San Diego Gas and Electric and delivered through the South Cummings Substation. Power is delivered at 69,000 volts by San Diego Gas and Electric, stepped down to 12,000 volts, and distributed to the Base at 12 kilovolts (DoN 2006a). Ship-to-shore pier power distribution consists of four 12 kilovolt loop configured circuits serving several substations located on the pier decks. Many of the modern vessels that will be homeported at NBSD will require 4,160 volts for ship-to-shore power.

3.15.1.6 Oily Waste Collection System

The oily waste treatment system at NBSD consists of the oily waste treatment plant, pump stations at the heads of selected piers, including Pier 13 (adjacent to Pier 12), pipelines connecting the piers to the treatment plant, pier pipeline systems, and risers on the pier. Pier 12 is not serviced by the BOWTS piping system, other than some pier risers along the adjacent quaywall, because it is too narrow to support an oily waste system (C. Graulau, personal communication 2008). Therefore, oily wastes generated from ships berthed at Pier 12 were pumped the length of the pier to tanker trucks on shore (R. Chichester, personal communication, 2008). The oily waste pipeline at adjacent Pier 13 is a double-walled, polyethylene pipeline that runs on the north and south sides of the pier and along the quaywall to Pump Station No. 13. There are risers on the pier and quaywall that discharge into the pipeline. Pumps from the ship are used to discharge the bilge and oily wastewater into the line, which is gravity fed to the pump station. The system is equipped with leak detectors (Hower Engineering 2008).

The NBSD BOWTS is operating under EPA ID#CA6170024289 and Conditional Authorization Tiered Permit Unit ID Number NAVSD-26-owt-3529 and regulated by the Department of Environmental Health as a hazardous waste tank system. Because the entire BOWTS is regulated under a Tiered Permit with the Department of Environmental Health, the system must conform to the associated regulations under 6.5HSC and CCR Title 22 (C. Graulau, personal communication 2008). There are multiple regulations for independent, third party engineering certification requirements. One is for the initial construction, which captures the "design". Another is captured under a "major repair". The third certification is a periodic

"recurring", in which there has been no change to the equipment. As long as the equipment being modified is "functionally equivalent", there may not be a need to certify design again. The regulations only authorize a maximum period of five years for a third party certification; however, a professional engineer may find it necessary to certify for a shorter period of time.

3.15.2 Environmental Consequences

3.15.2.1 Proposed Action

Water Supply

NBSD maintains a potable water supply to meet the needs of all users (DoN 2006a). The current system can accommodate the water demands of the proposed action. The new pier would include utility infrastructure for potable water distribution. Therefore, significant impacts on the NBSD potable water system would not occur.

Storm Drainage Systems

The proposed action would not contribute significantly to additional demands on the existing stormwater drainage system. Construction activities associated with the proposed action would not increase runoff volumes or otherwise affect the capacity of the existing system to handle surface runoff associated with pier demolition, dredging and associated activities, and construction of the new Pier 12 and related facilities. As discussed in Section 3.2, stormwater runoff during the construction phase would be regulated by a construction stormwater permit issued by the RWQCB. Operations associated with the proposed action would not significantly increase the amount or types of industrial activities that have occurred previously in the area. Therefore, project operations would not be expected to change the volume or composition of stormwater runoff. The new pier would include a stormwater collection system with an oil/water separator, and stormwater discharges would be regulated by the stormwater discharge permit. Therefore, the proposed action is not expected to alter the quality or quantity of stormwater runoff, and no significant impacts would occur.

Sewage Treatment

Additional wastewater demands would not be generated from the proposed action, other than temporary discharges of small volumes of decant water from the CDF site. Further, the proposed action would not affect subsurface sewage system infrastructure and/or increase wastewater treatment demands at the Pier 12 project site. The new pier would include utility infrastructure for sewage transfer. Therefore, no significant impacts would occur.

Solid Waste Disposal

Construction and demolition activities associated with the proposed action would generate a significant amount of debris that would require recycling or disposal in a landfill, as described in Chapter 2 and Appendix A. Materials appropriate for recycling, including concrete, steel, and asphalt would be recycled whenever possible. Concrete debris would be used to create FES (Chapter 2 and Appendix A). Materials that cannot be recycled would be transported to an approved disposal site or hauled directly to the Miramar Landfill.

An assessment of anticipated solid waste from the proposed action would determine opportunities for diversion in accordance with the Navy's integrated solid waste management

plan and guidance provided in OPNAVINST 5091.1C. A waste management plan would be established for the proposed action to define the types and quantities of waste generated, as well as specific measures for recycling, re-using, and salvaging materials. Waste management would be reviewed by Navy Region and NBSD Environmental prior to any waste disposal. The Navy would be responsible for monitoring for adherence to the waste management plan and would require periodic reporting of actual amounts salvaged, recycled, and disposed of in a landfill. Therefore, no significant impacts would occur.

Electricity

The proposed action would include utility infrastructure for electricity that would support a future upgrade of ship-to-shore power from 480 volt to 4,160 volt to meet future power intensive Fleet requirements by providing spare ducts-conduits. The project would include the addition of four 480 volt skid-mounted substations, two industrial power substations and four switches, two 4,160 volt skid-mounted transformers to Pier 12, and one 4,160 volt transformer to Pier 13 (DoN 2010a). Further, the existing South Cummings Substation feeder to Switch Station R (adjacent to Pier 12) would be upgraded from 800 amps to 2,000 amps to provide this type and amount of power to the new Pier 12. These upgrades would not create a demand that exceeds the system capacity. No significant impacts would occur from the proposed action.

Oily Waste Collection System

The new pier would include an oily waste piping system to shore (DoN 2010a). It is expected that the new system would conform to the associated regulations under 6.5HSC and CCR Title 22, and would include provisions for secondary containment and leak detection similar to the systems on adjacent piers (Hower Engineering 2008). The Navy would be required to notify Department of Environmental Health under CCR Title 22, 66265.192 (m) prior to installation of the system because the new system would not be identical or functionally equivalent to the existing system. Before demolition would begin, Department of Environmental Health would be notified that the piping on the adjacent quaywall would be modified on a specific date for pier demolition and new piping would be installed as part of the construction of the new Pier 12. In addition, an independent, professional engineer would certify the work, meeting the requirements of Title 22, 66265.192 including the assessment outlined in section (k), prior to ships use of the BOWTS pipeline (C. Graulau, personal communication 2008). A copy of the assessment would be provided to the NBSD Environmental Office and to Department of Environmental Health (C. Graulau, personal communication 2008). No significant impacts would occur from the proposed action.

Mitigation Measures

Significant impacts on utilities would not result from the proposed action. Therefore, no mitigation measures are proposed.

3.15.2.2 No-Action Alternative

Under the No-Action Alternative, existing utility usages would not be modified or disturbed; therefore no impacts would occur. However, beneficial impacts from improved utilities on Pier 12 that would occur with the construction of the new pier would not be realized.

4.0 CUMULATIVE IMPACTS

Federal regulations implementing NEPA (42 U.S.C. 4321 et seq.) and Navy Procedures for Implementing NEPA (32 CFR 775), as described in OPNAVINST 5090.1C, require that the cumulative impacts of a proposed action be assessed. The Council on Environmental Quality regulations implementing the procedural provisions of NEPA define cumulative impacts 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 (federal or non-federal) or person undertakes such other actions. (40 CFR 1507)

In order to analyze cumulative impacts, a cumulative impacts region must be identified for which impacts of the proposed action and other past, proposed, and reasonably foreseeable actions would be cumulatively recorded or experienced. Consequently, the region where cumulative impacts may occur includes NBSD and the surrounding area. The cumulative projects described in Section 4.1 focus on other military projects planned within San Diego Bay. The analysis presented in Section 4.2 considers additional impacts arising from the impacts of the proposed action combined with the impacts of other known past, present, and reasonably foreseeable future actions within this region.

4.1 CUMULATIVE PROJECTS

4.1.1 Upgrades to Magnetic Silencing Facility for Advanced Degaussing Systems (Naval Base Point Loma)

MILCON Project P-135 upgraded the Magnetic Silencing Facility at Naval Base Point Loma so that it could support newer class Pacific Fleet surface ships. Upgrades occurred at pre-existing piers and associated underwater grids, vessel mooring system, Anti-terrorism/Force Protection floating barriers, and power supply systems (which required the installation of a new on-shore electrical cable distribution system and on-shore building demolition, repair, and construction). As part of the project, Space and Naval Warfare Systems Command (SPAWAR) dolphin pens were reconfigured to add additional dolphin pens. A replacement pier was constructed to support access to the pens. Project activities were completed in 2009. A Finding of No Significant Impact (FONSI) was signed for this project.

4.1.2 Pier 5002 Sub Fender Installation (Naval Base Point Loma)

MILCON Project P-118 modified Submarine Pier 5002, south of the P-135 project area, at Naval Base Point Loma. It allowed mooring of submarines next to the maintenance building. The principal modification was removal of deteriorating timber piles and replacement with composite piles with an expected life of 50 years. Supplemental foam-filled fenders were interspersed between the submarine fenders to accommodate surface ships. There was no increase in the pier footprint and no dredging was done. New power supply booms routing shore power to moored submarines and extra communications lines were installed. The project occurred in 2008. A Categorical Exclusion (CATEX) was signed for the project.

4.1.3 Improved Navy Lighterage System Pier (NAB Coronado, Naval Base Coronado)

The Improved Navy Lighterage System project constructed waterfront command and control facilities for amphibious operations and training at the NAB Coronado main base. The project consisted of an Improved Navy Lighterage System lift/launch pier facility, including new pier construction and upgrades to pre-existing Piers 16, 18, and 19; road upgrades; increased storage yard space in conjunction with adequate maintenance and operational storage facilities; and quaywall repairs. A FONSI was signed for the project. Construction occurred in 2007 and 2008.

4.1.4 Fiddler's Cove Marina Repairs and Improvements Project (NAB Coronado, Naval Base Coronado)

The purpose of the Fiddler's Cove Marina Repairs and Improvements Project is to provide a functional multi-use, year-round recreational facility in San Diego County to support the military's regional recreational needs. The project is replacing and repairing deteriorated marina facilities at the existing Fiddler's Cove Marina, NAB Coronado, Naval Base Coronado. The proposed action includes restoration of slips and docks at Fiddler's Cove, replacement of the floating wave attenuation system, control erosion and stabilize the shoreline, and enhancement/expansion of existing recreational functions of the marina. A FONSI has been signed for the project. The Fiddler's Cove Marina Repairs and Improvements Project is under construction.

4.1.5 Quaywall Repair (Special Project RM11-05), (NASNI, Naval Base Coronado)

Special Project RM11-05 involved both in-water and land based construction to repair the deteriorated portions of the quaywall along Berths "L" through "P" at NASNI. The quaywall became distressed as a result of scouring at the base, which compromised its structural integrity. Repairs were needed to prevent structural failure of the quaywall and to provide for its continued functionality in support of the Navy's operational and support mission. Project components included: (1) dredging and disposal of 49,000 cy of bay sediment; (2) placement of rock armoring layers on the base of the sheet piling along the entire length of the quaywall (3,200 ft); (3) demolition and replacement of a portion (150 linear ft) of the damaged quaywall cap; (4) replacement of 150 linear ft of damaged steam line; (5) filling voids behind the quaywall; and (6) installation of new fendering at the location of the quaywall repairs. Construction occurred in 2008. A FONSI was signed for the project.

4.1.6 Pier 8 Replacement (Naval Base San Diego)

MILCON P-440 would demolish the inadequate existing Pier 8 at NBSD and construct a replacement general purpose berthing pier. The new, single-deck pier would provide berthing needs for modern ships in the U.S. Pacific Fleet. Pier design would include pre-stressed concrete piles supporting a concrete deck and support a future upgrade of shore-to-ship power to meet power intensive ship requirements. A stormwater collection system with an oil/water separator would be included. No dredging would be required because Pier 8 is already a deep draft pier. An EA is being prepared for this project.

4.1.7 P405 NBSD Bachelors Quarters - Homeport Ashore

This project would construct a 162,040 square ft bachelor enlisted quarters to house 772 E1-E4 personnel, with an additional 284,167 square ft to encompass a seven level parking structure. The project location is dry side NBSD (next to the bowling alley). Construction will be completed by early 2012. A CATEX has been completed for the project.

4.1.8 P750 NASNI Rotary Hangar

The project will provide an adequate helicopter maintenance facility and an aircraft parking apron to bed-down three helicopter squadrons being assigned to NASNI. The project will construct a multi-story, steel framed, three-bay maintenance hangar at the current site of Building 802. The hangar will have a concrete foundation, concrete first and second floors, interior partitions, steel roof deck, masonry walls, and a pile foundation. The project includes electrical and mechanical utilities, power check pad, engine wash pad, compressed air, secure communications connections, aircraft parking apron, and roadway. Built-in equipment would include an elevator, back-up generators, and a closed loop wash rack system. Special construction features would include sound attenuation for administration and shop space and an aqueous film-forming foam fire protection system. The project would also upgrade electrical power for the new MH-60S/R helicopters by installing a 1,500 kilovolt transformer and secondary switchboard and construct a 12 kilovolt duct bank with conductors, manholes, and switch. A 5-ton crane would be provided from other appropriations. The project will conform to Anti-Terrorism/Force Protection standards and follow sustainable development criteria for design, development, and construction of the project. P750's NEPA is included in the MH60 Homebasing EA which is nearing completion. Construction will begin in the year 2011

4.1.9 P880 NASNI Rotary Aircraft D-Level Maintenance Facility

This project will construct a depot-level rotary aircraft maintenance facility at NASNI. A new high-bay facility is required to support the current depot-level H-60 helicopter maintenance, repair, and overhaul program workload and to accommodate scheduled workload increases due to the arrival of three additional H-60 squadrons. The facility will house maintenance shops, administration offices, parts storage spaces, break room/lunch room, restrooms, showers, and locker rooms. The building space will consist of aircraft rework shop space (high bay), plant services for aircraft overhaul (administration and production control), and maintenance aircraft storage space. The project will also demolish 10 existing facilities. Sustainable design principles will be included in the design and construction of the projects in accordance with Executive Order 13123 and other laws and Executive Orders. Facilities will meet Leadership in Energy and Environmental Design (LEED) ratings and comply with Energy Policy Act of 2005. Low Impact Development will be included in the design and construction of this project. Construction would occur in fiscal year 2012.

4.1.10 LCS Homeporting EA

The Navy proposes to homeport 16 Littoral Combat Ships (LCS) on the West Coast of the United States. The homeporting would occur in phases over a 5-year period between 2013 and 2017. The Navy is considering two variants of the Littoral Combat Ships: the General Dynamics variant and Lockheed Martin variant. To ensure all potential homeporting scenarios are

appropriately addressed, the proposed action includes homeporting either 16 General Dynamics variants, 16 Lockheed Martin variants, or a combination of 16 General Dynamics and Lockheed Martin variants. The proposed action also includes stationing Littoral Combat Ship crews and their dependents; infrastructure upgrades required to support the storage and maintenance of aircraft systems (i.e., MQ-8B Firescouts) associated with the Littoral Combat Ships; ground transport of Firescouts, MH-60 squadrons and their associated equipment, and mission packages to and from the LCS homeport; and new land-based training requirements for the Littoral Combat Ships. In the Quadrennial Defense Review Report dated February 2006, the need for the Littoral Combat Ships in order to provide power projection capabilities in littoral waters is discussed. The Quadrennial Defense Review Report dated February 2010 includes the need to ensure that global basing posture is best aligned to address current and future issues. In accordance with these directives and other national defense priorities, the Navy developed its Strategic Laydown Plan, which requires 16 Littoral Combat Ships to be homeported on the West Coast of the United States.

For the EA, one alternative for the proposed action was carried forward for detailed analysis. The San Diego area alternative is considered a reasonable and viable alternative for homeporting 16 Littoral Combat Ships because it meets all of the operational criteria and satisfies the purpose of and need for the proposed action. Under the No Action Alternative, 16 Littoral Combat Ships would not be homeported on the West Coast of the United States.

4.1.11 Ford Class Carriers EA

The Navy proposes to replace the USS ENTERPRISE (CVN-65) and all Nimitz-Class aircraft carriers in the United States Navy Fleet with Ford-Class carriers beginning with the USS GERALD R. FORD (CVN-78) in 2015. West Coast homeport locations under consideration are Naval Base Coronado (California), Naval Base Kitsap-Bremerton (Washington), and Naval Station Everett (Washington). An EA is being prepared for this project.

4.1.12 AIMS Correction at SSTC-S

This project is the placement of a stone-filled concrete caisson structure around the existing eight piles of the "Assessment and Identification of Mine Susceptibility Array" at SSTC-S. The existing facility is one mile offshore in 50' of water. The concrete caisson would "stiffen" the structure, limiting its wave force deflection, and improving its performance. The project would start in Spring 2011 and would last two months. The project would include the creation of fish habitat through the placement of A-jacks structures. A CATEX was signed for the project.

4.1.13 Demolition of Pier 14 (Naval Base San Diego)

Pier 14, which was located south of the proposed Pier 12 site at NBSD, was demolished in early 2011. Pier 14 was a functionally obsolete single-deck concrete pier. There are no plans to replace this pier.

4.2 ENVIRONMENTAL ANALYSIS

4.2.1 Topography, Geology/Soils, and Seismicity

The proposed action and the identified reasonably foreseeable projects would be in compliance with applicable federal building codes, the Uniform Building Code, and Naval Facilities Engineering Command P-355 Seismic Design Manual. These features would reduce the cumulative impacts associated with potential risks to property and human safety as a result of geologic hazards to a less than significant level. Therefore, the proposed action, in combination with the identified reasonably foreseeable projects, would result in no significant cumulative impacts on topography, geology/soils, or seismicity.

4.2.2 Water Resources

The proposed action would not significantly impact surface water or groundwater because the Navy would implement standard erosion control and pollution prevention measures, as specified in the storm water pollution prevention plan, and other best management practices that would prevent releases of construction debris, soils/sediments, or other wastes from the project site. Consequently, the project would not contribute to cumulative impacts to water resources. Other Navy MILCON projects in the San Diego Bay region could produce minor discharges that would flow into surface drainages and eventually to the marine environment. However, these projects also would be required to comply with applicable federal, state, and local regulations, as well as general and construction stormwater permits. These mandated requirements would reduce potential impacts on water quality from the reasonably foreseeable cumulative projects to less than significant levels. Additionally, construction of the proposed action and reasonably foreseeable projects discussed in Section 4.1 would not likely occur at the same time and location. Therefore, their cumulative effect would not be significant, as the concentrations of discharges and releases would be moderated over space and/or time.

4.2.3 Air Quality

Impacts resulting from project emission sources, in combination with impacts from any reasonably foreseeable future projects, would occur during proposed removal and installation activities. Due to the mobile nature of most construction emission sources and the relatively short duration of proposed project activities, these sources would not be expected to contribute to significant impacts in a locality. The proposed action and reasonably foreseeable projects would not likely occur at the same time and location, so potential impacts would be moderated over space and/or time. As a result, proposed emission sources would not produce significant cumulative impacts to air quality.

The potential effects of proposed greenhouse gas emissions are by nature global and cumulative impacts, as individual sources of greenhouse gas emissions are not large enough to have an appreciable effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed greenhouse gas emissions combine with greenhouse gas emissions from other man-made activities on a global scale.

Currently, there are no formally adopted or published NEPA thresholds of significance for greenhouse gas emissions. Formulating such thresholds is problematic, as it is difficult to

determine what level of proposed emissions would substantially contribute to global climate change. Therefore, in the absence of an adopted or science-based NEPA significance threshold for greenhouse gases, this EA compares greenhouse gas emissions that would occur from the proposed action to the U.S. net greenhouse gas emissions inventory of 2007 to determine the relative increase in proposed greenhouse gas emissions. Appendix B presents estimates of greenhouse gas emissions that would be generated by the proposed action.

Table 4.2-1 summarizes the annual greenhouse gas emissions associated with the proposed action. These data show that the ratio of annual carbon dioxide equivalent (CO_{2e}) emissions estimated for the proposed action to carbon dioxide equivalent emissions generated from all sources in the U.S. in 2007 is 2,043/6,088 million metric tons (USEPA 2009). Therefore, carbon dioxide equivalent emissions associated with the proposed action would amount to approximately 0.000034 percent of the total carbon dioxide equivalent emissions generated by the U.S. These nominal emission increases from the proposed action would not produce significant cumulative impacts to global climate change. As a result, the proposed action, combined with other related and cumulative projects, would not result in associated significant cumulative impacts.

Table 4.2-1. Annual Greenhouse Gas Emissions - Proposed Action

Scenario/Activity	*Greenhouse Gas Components*			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Proposed Action Emissions (*Metric Tons per Year*)	0.30	0.02	2,030	2,043
U.S. 2007 Net Emissions (million metric tons per Year)	-	-	-	6,087.5
Proposed Action Emissions as a percent of U.S. Emissions	-	-	-	0.000034
Notes: CO_2e = (CO_{2e} * 1) + (CH_4* 21) + (N_2O * 310) Source (USEPA 2009)				

4.2.4 Marine Sediments, Bathymetry, and Water Quality

The pier demolition, dredging, and pier construction activities associated with proposed action would have short-term and localized impacts on sediment quality, bathymetry, and water quality. However, as discussed in Section 3.4, these activities would be conducted in accordance with a Debris Management Plan, spill response plan, and dredging permit. Additionally, the construction contractor would deploy a silt curtain to restrict the dispersion of suspended sediments, and associated changes in marine water quality, beyond the immediate construction area. For these reasons, the proposed action would not affect areas on the current Clean Water Act 303(d) list of impaired water bodies. The proposed action and reasonably foreseeable projects would not likely occur at the same time and location, so potential impacts would be moderated over space and/or time. Due to the minimal potential for impacts from the proposed action, in combination with project elements to avoid or minimize impacts to water quality, there would be no significant cumulative impacts.

4.2.5 Marine Biological Resources

The proposed action would affect but not adversely affect threatened or endangered species, have no long-term adverse effect to EFH, and only short-term, localized, and less than significant impacts to marine habitats, invertebrates, fish, and marine birds that occur in the

project vicinity. Because the replacement Pier 12 is wider and longer than the existing Pier 12, the project would result in an additional 3.0 acres of shading. From a cumulative effects standpoint, the effects of increased shading on San Diego Bay from this Pier 12 project is reduced by the past removal of Pier 14. For EFH, the proposed action would cause short-term adverse effects (primarily loss of soft bottom habitat) from the proposed FES, which would function as artificial reefs. However, the adverse effects would be offset by long-term benefits from creation of these artificial reef habitats. Artificial reef habitats are known to be associated with increased abundance and diversity of fish and invertebrate communities, including EFH species (Pondella et al. 2006). Further, a pre-, post and three-year post construction monitoring program would be conducted to validate environmental (recruitment and productivity) benefits from the FES. While construction of the replacement pier would change 3.0 acres of open bay habitat to a hard substrate, pier piling habitat, no net ecological change would occur, as discussed in Section 3.5. The proposed action and reasonably foreseeable projects would not likely occur at the same time and location, so potential impacts would be moderated over space and/or time. Due to the limited scope (time and footprint) of impacts associated with the proposed action, there would be no significant cumulative impacts.

4.2.6 Terrestrial Biological Resources

The proposed action would have short-term, localized, and less than significant effects on terrestrial biological resources, specifically on the man-made habitats and associated species that predominate in the project region. Further, there would be no effect on sensitive plant species and no effect to threatened or endangered animals, principally due to a lack of suitable habitat. The proposed action and reasonably foreseeable projects would not likely occur at the same time and location, so potential impacts would be moderated over space and/or time. Due to the limited scope of the impacts associated with the proposed action, there would be no significant cumulative impacts.

4.2.7 Land Use

The proposed action would not result in significant impacts to land use because existing land use designations would not change as a result of the proposed action, and the existing land uses within the project area would essentially continue to be used for the same purposes. Therefore, the proposed action in conjunction with other planned actions would not result in significant cumulative impacts to land use.

4.2.8 Socioeconomics

Implementation of the proposed action in conjunction with other reasonably foreseeable projects would not cause significant cumulative impacts to commercial or recreational activities in the project vicinity or general region because the project site would be located inside the Navy's existing security barrier at NBSD that restricts public access. Further, while the project could generate temporary construction work, it is not expected to provide permanent jobs or contribute to population growth in the region. Implementation of the proposed action in conjunction with other foreseeable projects would not have an adverse effect on human health or create any safety risks for populations in adjacent areas because all of the project construction and operation activities would occur within a secure area with restricted access. The proposed action would occur at an existing Naval facility and it would not disproportionally affect low

income or disadvantaged populations or result in or contribute to significant environmental justice impacts; therefore, cumulative impacts would not occur.

4.2.9 Transportation and Circulation

The proposed action would not result in significant impacts to regional or installation-specific traffic and circulation, as it would involve no net change in the number of military and civilian personnel currently using the local and regional circulation system and marine and offshore transit areas. While the construction phase of the proposed action would result in intermittent and temporary increases in truck traffic, these are not expected to result in significant traffic impacts (see Section 3.9). The proposed action and reasonably foreseeable projects would not likely occur at the same time and location, so potential impacts would be moderated over space and/or time. Therefore, the proposed action, in conjunction with other projects on and in the vicinity of the project, would not result in significant cumulative traffic and circulation impacts.

4.2.10 Noise

Airborne noise impacts from the project would be less than significant because levels would be below established limits and construction noise would be temporary and intermittent. Underwater noise would not cause significant impacts to fish and would not affect marine mammals and sea turtles because these species are highly mobile and can avoid these short-term disturbances. The proposed action and reasonably foreseeable projects would not likely occur at the same time and location, so potential impacts would be moderated over space and/or time. Therefore, the proposed action, in conjunction with other projects on and in the project vicinity, would not result in significant cumulative impacts.

4.2.11 Aesthetics and Visual Resources

The proposed action would not result in the obstruction or degradation of any scenic viewshed and would be consistent with existing visual qualities associated with Navy and general maritime industrial activities. Project activities would not be visible to any sensitive scenic receptors. Therefore, the proposed action, in conjunction with other projects in the project vicinity, would not result in significant cumulative aesthetics impacts.

4.2.12 Cultural Resources

In conformance with Stipulation 8A of the Metro Area PA, NRSW has determined that the proposed action would not affect listed, contributing, or eligible National Register of Historic Places properties. Consistent with 36 CFR 800.4(d)(1), NRSW has accordingly made a determination of "no historic properties affected" for the proposed undertaking. In accordance with Stipulation 8A of the Metro Area PA, no further compliance (i.e., Indian tribal consultation, monitoring or a data recovery [mitigation] strategy) under Section 106 or 36 CFR 800 would be required. However, it is possible that other projects on and in the project vicinity could impact known historic properties, including archeological resources, historic architectural resources, or traditional cultural resources. The Navy would work closely with the State Historic Preservation Officer to ensure that projects on and in the project vicinity would not result in significant cumulative impacts on cultural resources.

4.2.13 Public Access/Coastal Zone

NBSD is owned and operated by the Navy and access is controlled for reasons of public safety and military security. The proposed action would not impose new restrictions on the public's right of access to the sea in the coastal zone. Therefore, the proposed action, in conjunction with other projects on and in the project vicinity, would not result in significant cumulative impacts to public access and recreation.

4.2.14 Safety and Environmental Health

The proposed action would not result in significant impacts to environmental health and safety of public or military personnel. In addition, the action would not result in environmental health risks or safety risks to children. Therefore, the proposed action, in conjunction with other projects on and in the project vicinity, would not result in significant cumulative environmental health and safety impacts.

4.2.15 Utilities

The proposed action would involve no significant net change in utilities usage. Additionally, the proposed action would have a beneficial impact by upgrading utility infrastructure on Pier 12. Therefore, the proposed action, in conjunction with other projects on and in the project vicinity, would not exceed the capacities of existing infrastructure, require construction of new infrastructure, or result in significant cumulative impacts to utilities.

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5.0 OTHER NEPA CONSIDERATIONS

5.1 POSSIBLE CONFLICTS BETWEEN THE PROPOSED ACTION AND THE OBJECTIVES OF FEDERAL, STATE, LOCAL, AND REGIONAL LAND USE PLANS, POLICIES, AND CONTROLS

Implementation of the proposed action would comply with existing federal regulations and state, regional, and local policies and programs. The federal acts, executive orders, policies, and plans that apply include the following: NEPA; Clean Air Act and Federal General Conformity Rule; Clean Water Act; Coastal Zone Management Act; Endangered Species Act (ESA); Marine Mammal Protection Act; Migratory Bird Treaty Act and Executive Order 13186; National Historic Preservation Act; Executive Order 12898, Minority Populations and Low-Income Populations; Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks; and Executive Order (EO) 12372, Coordination with State and Regional Agencies. Applicable state, local, and regional plans, policies, and controls include: California Coastal Act, California Endangered Species Act, and San Diego County Air Pollution Control District Rules and Regulations.

5.1.1 Federal Acts, Executive Orders, Policies, and Plans

5.1.1.1 National Environmental Policy Act

This EA was prepared in accordance with the NEPA, 42 U.S.C. §§ 4321-4370d, as implemented by the Council on Environmental Quality Regulations, 40 CFR Parts 1500-1508 and the DoN Regulations described in OPNAVINST 5090.1C. Executive Order 11991 of 24 May 1977 directed the Council on Environmental Quality to issue regulations for procedural provisions of NEPA; these are binding for all federal agencies.

5.1.1.2 Clean Air Act and General Conformity Rule

The Clean Air Act of 1955 and subsequent amendments specify regulations for control of the nation's air quality. Federal and state ambient air standards have been established for each criteria pollutant. The 1990 amendments to the Clean Air Act require federal facility compliance with all applicable substantive and administrative requirements for air pollution control. The air quality analysis (Section 3.3) shows that the proposed action would not contribute to an exceedance of an ambient air quality standard. The Clean Air Act requires federal actions to conform to the goals of the applicable State Implementation Plan. The Navy has determined that this proposed action would conform to the State Implementation Plan (see Appendix B).

5.1.1.3 Clean Water Act

The federal Clean Water Act was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the U.S. The Clean Water Act includes programs addressing both point source and nonpoint source pollution, and empowers the states to set state-specific water quality standards and to issue permits containing effluent limitations for point source discharges. The USEPA has adopted water quality standards for certain toxic pollutants in California (the California Toxics Rule).

Section 401 – Water Quality Certification

Under Clean Water Act Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the U.S., including discharges of dredged or fill material, must obtain certification from the state in which the discharge would originate. The Navy has submitted an application for a Section 401 Water Quality Certification from the RWQCB, San Diego Region. This certification is required by USACE before a Section 404 permit can be issued (see below). Minor, localized resuspension of bottom sediments would occur during dredging and other in-water construction activities, but would not result in significant water quality impacts due to the localized and temporary nature of these activities.

Section 402 – Permits for Stormwater Discharge

Section 402 of the Clean Water Act, administered by the RWQCB, regulates the discharge of pollutants to waters of the U.S. from any point source. This program regulates construction-related stormwater discharges to surface waters through USEPA's NPDES program. An NPDES permit is required for: (1) any proposed point source wastewater or stormwater discharge to surface waters from municipal areas with a population of 100,000 or more; and (2) construction activities disturbing 0.4 hectares (1 acre) or more of land. A storm water pollution prevention plan would be required for the project pursuant to the general permit for construction-related discharges.

Section 404 – Permits for Fill Placement in Waters and Wetlands

Section 404 of the Clean Water Act prohibits discharges of dredged or fill material into jurisdictional "waters of the U.S." without a permit issued by the USACE. "Waters of the U.S." are broadly defined in USACE regulations (33 CFR §328.3) to include navigable waters, their tributaries, and adjacent wetlands. The USACE regulates, through the issuance of a Section 404 permit, the discharge of dredged or fill material in waters of the U.S.

5.1.1.4 Rivers and Harbors Act

Permits are required from the USACE under Section 10 of the Rivers and Harbors Act for all structures and/or work in or affecting navigable waters of the U.S. (§322.3[a]) (see 33 CFR 322.2[a] for USACE authority under Section 10, and 33 CFR 329.4 for the definition of navigable waters). Section 10 of the Rivers and Harbors Act would apply to the project, and a Rivers and Harbors Act permit would be required for this project because it involves work in navigable waters.

The Navy has applied for a Clean Water Act Section 404 permit from the USACE, which also would fulfill Section 10 permit requirements. The proposed action would involve dredging and other in-water construction activities, but no significant changes would occur to the environment, such as water circulation.

5.1.1.5 Marine Protection Research and Sanctuaries Act

The Marine Protection, Research and Sanctuaries Act establishes the framework for the control of dumping material in the territorial sea and seaward and includes specific criteria and conditions for permissible dumping. This Act is the primary federal environmental statue

governing the discharge of dredged material in the ocean. Under the authority of Section 103 of the Act, USACE may issue ocean dumping permits for dredged material if the USEPA concurs with the decision.

5.1.1.6 Coastal Zone Management Act

Coastal Zone Management Act of 1972 requires that federal actions which affect any land or water use or natural resource of the coastal zone must be consistent to the maximum extent practicable with the State program. State Coastal Zone Management Act programs include point and non-point source pollution control, flood control, sediment control, grading control, and storm water runoff control. The Navy has prepared a Coastal Consistency Negative Determination (CCND) in accordance with the Coastal Zone Management Act (see Appendix C). The California Coastal Commission concurred with Navy's negative determination (letter dated 26 April 2011; Appendix C).

5.1.1.7 Endangered Species Act

The Endangered Species Act of 1973 and subsequent amendments provide for the protection of threatened and endangered species of fish, wildlife, and plants and their habitats. The Act requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of endangered or threatened species. This EA concluded that there would be no effect from the proposed action to threatened or endangered species or EFH, and no impacts to special aquatic sites. The formal Magnuson-Stevens Act EFH analysis is included as Appendix E, and a copy of letter documenting informal consultation with National Marine Fisheries Service regarding green sea turtles is provided in Appendix F. Copies of correspondence between the Navy and U.S. Fish and Wildlife Service, documenting informal consultation and concurrence that the project would affect but not adversely affect the California Least Tern, and the California Least Tern Memorandum of Understanding, are provided in Appendix G.

5.1.1.8 Marine Mammal Protection Act

The Marine Mammal Protection Act protects marine mammals and establishes a marine mammal commission. Under the provisions of the Act, federal agencies must not take (harm, harass, or kill) any marine mammal on the high seas, or in waters or on land under the jurisdiction of the U.S. This EA (Section 3.5) concluded that there would be no harm, harassment, or take of marine mammals under the Marine Mammal Protection Act.

5.1.1.9 Migratory Bird Treaty Act

All marine birds that occur in San Diego Bay are protected under the Migratory Bird Treaty Act and Executive Order 13186, which directs federal agencies to avoid or minimize negative effects on migratory birds, to protect their habitats, and to consider effects on migratory birds in NEPA documents. This EA (Section 3.5) concluded that there would be no effect on migratory birds as a result of the proposed action.

5.1.1.10 National Historic Preservation Act

The National Historic Preservation Act was passed in 1966 to provide for the protection, enhancement, and preservation of those properties that possess significant architectural, archaeological, historical, or cultural characteristics. Section 106 of the National Historic

Preservation Act requires the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking, prior to the expenditure of any federal funds on the undertaking, to take into account the effect of the undertaking on any historic property.

For the proposed action, compliance with Section 106 of the National Historic Preservation Act and 36 CFR 800 has been previously accomplished under the San Diego Metropolitan Area Programmatic Agreement (Metro Area PA), executed in February 2003 between NRSW, the Advisory Council on Historic Preservation, and the California State Historic Preservation Office. The Metro Area PA provides for NRSW determinations of a project's area of potential effect, identification of potentially affected historic properties, and assessment of "no historic properties affected" and "no adverse effect" without further consultations with California State Historic Preservation Office that normally are required under 36 CFR 800.

5.1.1.11 Executive Order 12898

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs all federal departments and agencies to incorporate environmental justice considerations in achieving their mission. Each federal department or agency must identify and address disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority populations and low-income populations.

The proposed action is not expected to have any adverse effect on human health or to create any safety risks for populations in adjacent areas (Section 3.14). Therefore, the proposed action would not adversely affect any minority populations or low-income populations (Section 3.8).

5.1.1.12 Executive Order 13045

In 1997, Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, was issued. This order requires each federal agency to "…make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall…ensure that its policies, programs, activities and standards address disproportionate risks to children…."

The proposed action would occur on NBSD, which is a restricted industrial area that is off-limits to children. Therefore, significant impacts associated with environmental health risks and safety risks to children would not occur.

5.1.1.13 Executive Order 12372

Executive Order 12372, Intergovernmental Review of Federal Programs, was issued in 1982 in order to foster an intergovernmental partnership and a strengthened federalism by relying on state and local processes for the state and local government coordination and review of proposed federal financial assistance and direct federal development.

The Navy pursues close and harmonious planning relations with local and regional agencies and planning commissions of adjacent cities, counties, and states. In preparing this EA, relevant data from state, regional, and local agencies were reviewed in order to determine regional and local conditions associated with the proposed action. These agencies included the California

Air Resources Board, the San Diego County Air Pollution Control District, and the RWQCB. With respect to the proposed action, no mutual land use or environmental issues require resolution.

5.1.2 State, Local, and Regional Plans, Policies, and Controls

5.1.2.1 California Coastal Act

The proposed action would not adversely affect coastal resources.

5.1.2.2 California Endangered Species Act

Although the California Endangered Species Act does not apply on strictly federal lands or to federal actions, state-listed species are addressed in this document (Section 3.5). Information presented this EA concluded that there would be no effect from the proposed action on species covered under the California Endangered Species Act.

5.1.2.3 San Diego County Air Pollution Control District Rules and Regulations

Proposed action air emissions would comply with all applicable San Diego County Air Pollution Control District Rules and Regulations.

5.2 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF NATURAL OR DEPLETABLE RESOURCES

NEPA requires an analysis of significant, irreversible effects resulting from implementation of a proposed action. Resources that are irreversibly or irretrievable committed to a project are those that are typically used on a long-term or permanent basis; however, those used on a short-term basis that cannot be recovered (e.g., non-renewable resources such as metal, wood, fuel, paper, and other natural or cultural resources) also are irretrievable. Human labor also is considered an irretrievable resource. All such resources are irretrievable in that they are used for one project and thus become unavailable for other purposes. An impact that falls under the category of the irreversible of irretrievable commitment of resources is the destruction of natural resources that could limit the range of potential uses of that resource.

Implementation of the proposed action would result in an irreversible commitment of building materials; fuel for ships, vehicles, and equipment used during removal and construction activities; and human labor and other resources. Energy (electricity) and water consumption, as well as demand for services, would not increase significantly as a result of the implementation of the proposed action. These commitments of resources are neither unusual nor unexpected, given the nature of the action.

The proposed action would not result in the destruction of environmental resources such that the range of potential uses of the environment would be limited, nor affect the biodiversity of the region.

5.3 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM BIOLOGICAL PRODUCTIVITY

NEPA requires consideration of the relationship between short-term use of the environment and the impacts that such use could have on the maintenance and enhancement of long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Such impacts include the possibility that choosing one alternative could reduce future flexibility to pursue other alternatives, or that choosing a certain use could eliminate the possibility of other uses at the site.

Implementation of the proposed action would not result in any such environmental impacts because it would not pose long-term risks to health, safety, or the general welfare of the communities surrounding the project area that would significantly narrow the range of future beneficial uses. In addition, biological productivity would not be affected as implementation of the proposed action would not result in significant direct, indirect, or cumulative impacts to any biological resources.

5.4 ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION

This EA has determined that the proposed action would not result in any significant impacts; therefore, there would be no probable adverse environmental effects that could not be avoided or that would not be amenable to mitigation.

6.0 LIST OF PREPARERS

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