Final Section 404(b)(1) Alternatives Analysis
Port of Long Beach
Middle Harbor Redevelopment Project

I. INTRODUCTION

The following evaluation is provided in accordance with Section 404(b)(1) of the Clean Water Act and the Section 404(b)(1) Guidelines (40 CFR 230). The impact evaluation is summarized from the Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Middle Harbor Redevelopment Project ("Project" or "proposed Project") and is not intended to be a stand-alone document. References to sections of the Final EIS/EIR where more information may be obtained are provided throughout this analysis.

II. PROJECT DESCRIPTION

The Port of Long Beach (POLB) Middle Harbor Redevelopment Project involves widening Slip 3 and excavation at Berth F201, filling Slip1 and portions of East Basin, demolition and reconstruction of wharves, construction of a new Berth E23, development of new container terminal facilities on the new landfills, improvement of adjacent backlands, and modifications to transportation systems on land. The proposed Federal action is for the U.S. Army Corps of Engineers (USACE) to issue a permit for work, including dredge and fill activities, and structures in waters of the U.S. for the Project. Alternatives to the 345-Acre Alternative (the Project; Alternative 1) include a 315-Acre Alternative (Alternative 2), Landside Improvements Alternative (Alternative 3), and No Project Alternative (Alternative 4). The Landside Improvements Alternative and No Project Alternative would have no in-water construction, and therefore, would require no NEPA impact analysis or Federal permits from the USACE.

A. Location

The proposed Project is located in the Middle Harbor, Northeast Harbor, and Southeast Harbor Planning Districts of the POLB, Los Angeles County, California. The Project comprises Piers D, E, and F and is bordered by Pier D Street and Ocean Boulevard to the north, Pico Avenue to the south, and the Back Channel to the west. The Federal portion of the Project includes Slip 1, Slip 3, the eastern portion of East Basin, and Berths D28-31, E23-27, E11-13, F1-4, and F6-10. Modifications to the backlands associated with the berths do not require any Federal permits.

B. General Description

The Project includes the following components:

- Demolition of Berths D29-31, E12-13, E23-26, and F1-10;
- Excavation of approximately 710,000 cubic yards (cy) of material from Berths D29-31 and E24-26 to widen Slip 3 by about 117 feet, excavation of about 580,000 cy at Berth F201, and dredging approximately 680,000 cy to deepen portions of Slip 3 to -55 feet Mean Lower Low Water (MLLW). The excavation would create approximately 10.7 acres of marine habitat;

- Construction of rocky dikes along the excavated berths in Slip 3, at Berth F201, for extension of Berth E24, and to contain the stages of fill in Slip 1 and East Basin (1,404,000 tons of rock);

- Abandonment and relocation of the Tidelands oil well facilities and pipelines on the southwest portion of Pier E, and removal of the Baker Commodities, Inc. facilities on Pier D;

- Fill of approximately 25.6 acres in Slip 1, 5.4 acres at Berth E24, and 34.3 acres in East Basin using about 680,000 cy of material dredged from Slip 3, 1,290,000 cy of material excavated from Pier D and Berth F201, and an additional 6,730,000 cy of material imported from inside and outside the Harbor District;

- Extension of Berth E24 southward and construction of a new Berth E23 south of E24. This includes demolition of approximately 550 linear feet of wharf and bulkhead at E24, and construction of 2,450 linear feet of new wharf;

- Construction of a new 66 kilovolt(kV) substation on Pier E;

- Realignment of the mainline track at Ocean Boulevard/Harbor Scenic Drive by removing about 4,000 feet of track, realigning 4,000 feet of track, and constructing about 6,000 feet of new track. Approximately 1,700 feet of Harbor Scenic Drive would also be relocated;

- Construction of Pier F storage yard and tracks (approximately 8,000 feet of new track);

- Redevelopment of Berths E25-26 by demolishing and reconstructing about 1,800 lf of existing wharf, and wharf improvements at Berth E27;

- Construction of container terminal facilities on the fill in Slip 1 and East Basin;

- Demolition of Seaside Railyard on Pier E and redevelop that area and adjacent terminal area (32 acres total) as container storage yard/backland area;

- Redevelopment of 18 acres north of the Gerald Desmond Bridge and Ocean Boulevard;

- Expansion of the Pier F intermodal railyard; and

- Redevelopment of the existing Pier F, including grading, paving, fencing, lighting, buildings and other infrastructure, utilities, tail track, and a loop road.

The Federal action is for the USACE to issue a permit authorizing work and structures in navigable waters of the U.S. and the discharge of fill in waters of the U.S. Components of the Project that would need such USACE approval include wharf demolition and reconstruction at Berths E23-26, new wharf construction at Berth E23, dredging in Slip 3, placement of fill in Slip 1 and East Basin, and construction of rocky dikes for containment of fill and as part of wharf reconstruction. Any contaminated material used for fill would be placed in an engineered Confined Disposal Facility (CDF) within the proposed fill.

C. Authority and Purpose

Discharge of fill material into “waters of the United States” requires compliance with Section 404 of the Clean Water Act. A Section 404(b)(1) alternatives analysis is one of the provisions required to demonstrate compliance with the Clean Water Act.

Anticipating the importance of containerized shipping, the Ports of Long Beach and Los Angeles have conducted several studies to evaluate the capacity of the combined port complex in San Pedro Bay to accommodate cargo forecasts. Portions of the San Pedro Bay Ports Long-Term Cargo Forecast (Mercer 1998) were updated in 2001 for the Ports of Long Beach/Los Angeles Transportation Study (Meyer, Mohaddes Associates 2001). These studies indicate that if the ports had unlimited capacity to accommodate future cargo forecasts, overall container throughput for the San Pedro Bay ports could reach 36.2 million twenty-foot equivalent units (TEUs) by 2020 (more than double the 14.2 million TEUs throughput for the ports in 2005). In February 2005,

the ports completed a "Forecast of Container Vessel Specifications and Port Calls Within San Pedro Bay" (Mercator 2005). This study forecasted the number and size of vessels expected to call at POLB and POLA if cargo growth proceeds as expected. Increasing cargo volumes combined with the continued introduction of larger vessels would result in a 74 percent increase in the number of ship calls at the Ports between 2004 and 2020. The forecast also projects an increase in larger vessels. Without expansion or significant improvements, the capacity of the existing POLB facilities is estimated to be approximately 12 million TEUs per year. Based on the Port's growth expectations, that level of throughput would be reached by 2015. The improved terminal efficiency and additional terminal acreage provided by the Port's terminal development program would increase overall capacity to 20.3 million TEUs per year and delay Port-wide capacity constraints to after 2020. Estimated future cargo volumes and terminal capacity (throughput) for the Port indicate that terminal capacity needs to be increased to meet the projected demand. The proposed Project would meet a public need for economic growth in trade and import/export of goods, as well as a need for efficiency in cargo handling at the Port.

The Project need is to increase container terminal efficiency to accommodate a portion of the predicted future containerized cargo throughput volume and the modern cargo vessels that transport those goods to and from the Port. These larger container vessels need slip widths, water depths, and berth lengths that are greater than previous generations of cargo vessels. The overall Project purpose is to increase and optimize the cargo handling efficiency and capacity of the Port, by constructing sufficient berthing and infrastructure capacity to accommodate a proportional share of foreseeable increases in containerized cargo. Additional Project purposes include improving marine terminal operational efficiency that would expand the use of existing waterways for international maritime commerce, and upgrading utility infrastructure to support the implementation of environmental controls necessary to reduce pollution and conserve energy.

D. Alternatives Considered

During the NEPA process, the following alternatives to the Project (345-Acre Alternative) were thoroughly reviewed: 315-Acre Alternative; Landside Improvements Alternative; and No Project Alternative (Figure 1).

Under the Project, the existing 294-acre Project site would be increased to 345-acres, which would require a net fill of 54.6 acres in waters of the U.S. The Project includes terminal consolidation, redevelopment, and expansion in areas of existing and newly created land, dredge and fill operations, wharf construction to create three deep water berths with -55 feet MLLW depths, rail infrastructure improvements (e.g., mainline track realignment at Ocean Boulevard/Harbor Scenic Drive, Pier F Avenue storage yard and tracks, Pier F tail track, and expanding the existing Pier F intermodal railyard); and construction of a 66kV substation that would support Middle Harbor container terminal operations, including supplying shore-to-ship power, and future power needs for other Port facilities. When optimized at maximum throughput capacity (by year 2025), the consolidated container terminal would be designed to accommodate approximately 3,320,000 TEUs per year.

The 315-Acre Alternative would add a net fill area of approximately 24.7 acres to the existing 294-acre Project site by filling Slip 1 between Piers E and F (Berths E12-E14 and F1-F4). This alternative would include terminal expansion on adjacent areas of existing and newly created land, dredge and fill operations, and new wharf construction. Under this alternative, a new wharf would be constructed to handle increased cargo throughput and accommodate deep-draft container ships, and to replace existing, insufficient wharves. The new 2,900-foot wharf would consist of two deep water berths with -55 feet MLLW depth. Buildout under this alternative would include the rail improvements identified for the Project (e.g., mainline track realignment at Ocean Boulevard/Harbor Scenic Drive, Pier F Avenue storage yard and tracks, Pier F tail track, and expanding the existing Pier F intermodal railyard). However, due to land constraints the area along the railyard would be limited in width under this alternative. The proposed 66kV Pier E Substation would be constructed, as described for the Project. When optimized at maximum throughput capacity (anticipated by approximately 2025), the consolidated container terminal would be designed to accommodate approximately 2,870,000 TEUs per year.

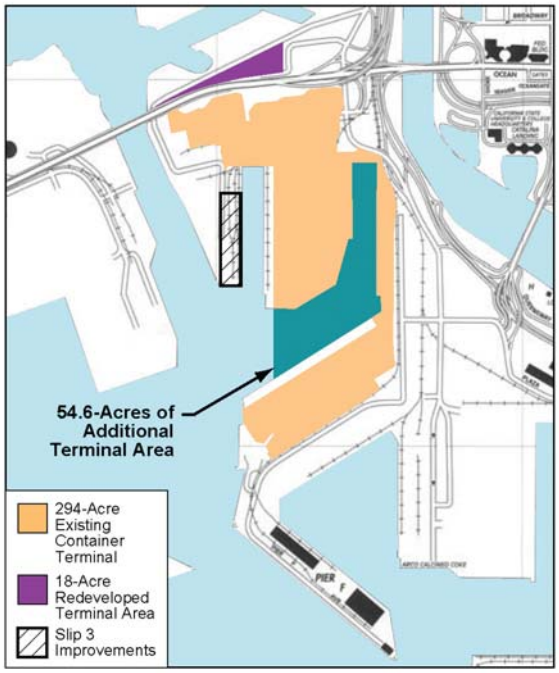
The Landside Improvements Alternative would redevelop existing terminal areas on Piers E and F and convert underutilized land north of the Gerald Desmond Bridge and Ocean Boulevard within the Project site to a container yard. The alternative would include construction of the following upland site improvements: redevelopment and backland expansion on existing lands within the Project site (the Berth E23 oil area would be abandoned and redeveloped as container yard area); construction of a new 66 kV Pier E Substation; and construc-

tion of shore-to-ship infrastructure at Piers E and F to cold-iron vessels while at berth. This alternative would also include construction of a mainline track realignment at Ocean Boulevard/Harbor Scenic Drive and the Pier F storage yard and tracks. The alternative would expand the existing Pier F intermodal railyard to six tracks. When optimized at maximum throughput capacity (anticipated by approximately 2025), the terminal would be designed to accommodate a combined total of about 2,910,000 TEUs per year. Under this alternative, there would be no in-water activities (e.g., dredging, filling Slip 1 and the East Basin, new wharf construction) as proposed for the Project, no wharf upgrades would occur (except the provisions for shore-to-ship power), and channel and berth deepening would not occur. The Landside Improvements Alternative is equivalent to a No Federal Action Alternative because it only includes construction and operational activities that would not require issuance of federal permits.

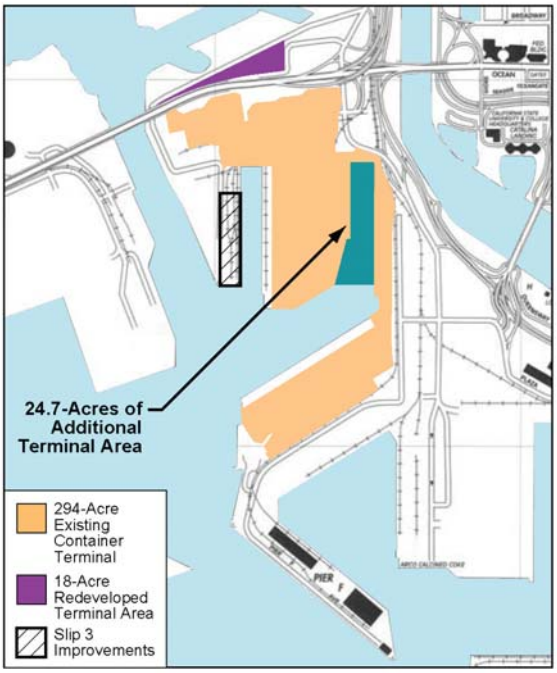
The No Project Alternative considers what would reasonably be expected to occur on the site if the Port did not implement, or federal action did not permit, the proposed Project. The Port would take no further action to construct additional backlands or redevelop the 294 acres that currently exist. The USACE would not issue permits for dredge and fill or wharf construction activities. The No Project Alternative would maintain the current California United Terminals (CUT) and Long Beach Container Terminal, Inc. (LBCT) container terminals at a combined size of 294 acres and in their current configuration. Forecasted increases in cargo would still occur as greater operational efficiencies are implemented. Under this alternative no construction and, consequently, no construction-related impacts would occur. However, the two terminals would continue to generate operational impacts: cargo ships that currently berth and load/unload at the terminal would continue to do so; terminal equipment would continue to handle cargo containers; and trucks would continue to transport containers to outlying distribution facilities. The No Project Alternative would result in a maximum throughput of approximately 2,600,000 TEUs per year.

An additional alternative was identified by the U. S. Environmental Protection Agency (EPA) during the Draft EIS/EIR public review period. The proposed alternative would not include any fill activities, but would provide deeper water (-55 feet MLLW) at berths and in basins and channels to accommodate the current and expected future generations of cargo vessels. However, under this alternative the existing terminal areas would remain insufficient to support the activities and modern equipment necessary to efficiently and safely handle the anticipated containerized cargo volumes. Furthermore, Slips 1 and 3 would remain too narrow (395 feet and 364 feet, respectively) for the current larger vessels that require a width of approximately 480 feet to maneuver safely up to and away from the existing berths; and Pier E docks and adjacent backland areas would be separated from the intermodal rail facilities on Pier F, resulting in an existing Pier E terminal that would be inadequately connected to the essential infrastructure required to handle intermodal containerized cargo. Also, as dredged material would not be reused under this alternative, the Port would need to locate new disposal locations and conduct additional sediment characterization. Therefore, this alternative was eliminated from further consideration in the Final EIS/EIR.

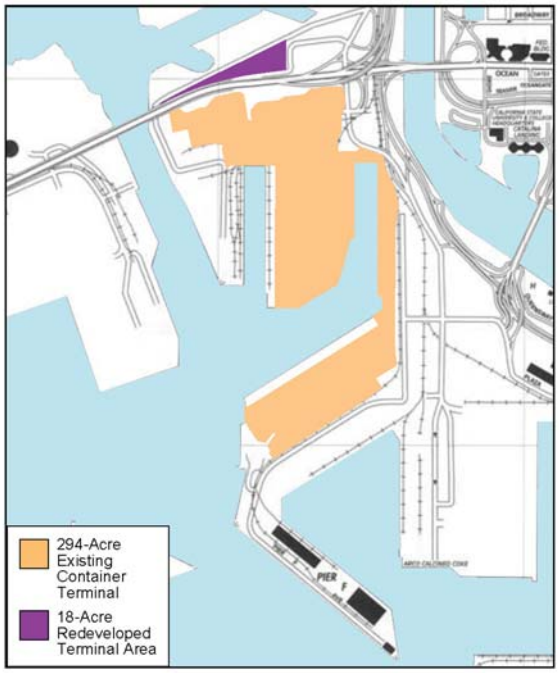
A description of other alternatives considered but eliminated from consideration is included in Final EIS/EIR Section 1.6.2.



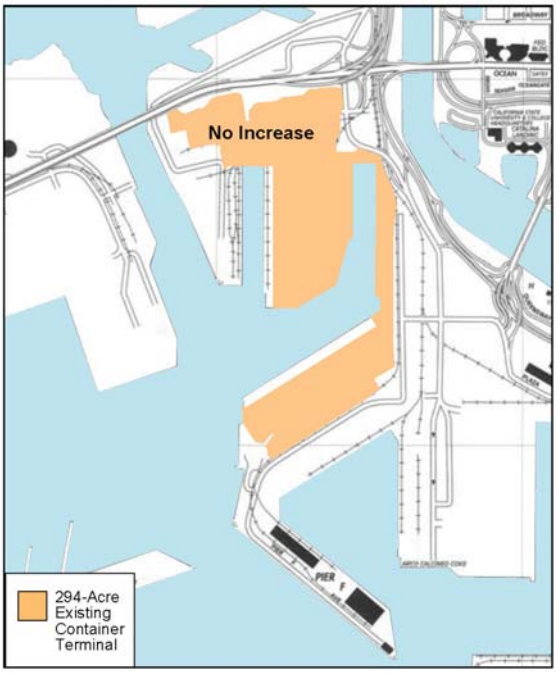
Alternative 1:
345-Acre Alternative (The Project)



Alternative 2:
315-Acre Alternative



Alternative 3:
Landside Improvements Alternative



Alternative 4:
No Project Alternative

E. Description of Dredged/Fill Material

Sediments that would be dredged are described in Final EIS/EIR Section 3.3, Hydrology and Water Quality, and are summarized below. Sediments within the Project area are primarily composed of nearshore marine or estuarine sediments that were either deposited in place along the margin of the early San Pedro embayment or subsequently dredged and placed at their current locations as fill material. Spills and runoff of petroleum products and hazardous substances due to long-term industrial land use have resulted in contamination of some sediments. Waters of the Long Beach/Los Angeles Outer Harbor and Long Beach/Los Angeles Inner Harbor are listed as impaired under 303(d) of the Clean Water Act. The Project is located primarily in the Inner Harbor, but much of East Basin is within the Outer Harbor.

Sediments in the Project vicinity are predominantly fine grained (MEC Analytical Systems, Inc. 2002). In Slip 1, sediments were over 99 percent silt and clay, while the channel just south of East Basin was 89 percent silt and clay. East Basin was last dredged in 1997, with Slip 3 dredged in 1999 and Slip 1 dredged in 1971.

Soils in the areas to be excavated for widening Slip 3 were sampled as described in Final EIS/EIR Section 3.1, Geology, Groundwater, and Soils, and some areas of contamination were found for total extractable hydrocarbons (TEH), organochlorine pesticides (OCP), and polynuclear aromatic hydrocarbons (PAH) (Pacific Edge Engineering, Inc. 2006).

- TEH concentrations, as oil and diesel, were detected in 10 of 133 samples, at maximum concentrations of 180 parts per million (ppm) and 105 ppm, respectively.
- Of 93 samples analyzed, VOCs were not detected above practical quantitation limits (PQLs), or the lowest levels which can be routinely quantified and reported by a laboratory.
- Of 133 samples analyzed, OCPs dichloro-diphenyl-dichloroethylene (DDE) and dichloro-diphynel-trichloroethane (DDT) were detected above PQLs in one boring, to a depth of 14 feet, and in three other borings, to a depth of three feet.
- Polychlorinated biphenyls (PCB) were not detected in any of the 133 samples analyzed for these contaminants.
- Hazardous concentrations of metals were not detected in the 133 samples analyzed.
- Carcinogenic PAHs (based on the EPA Region 9 Preliminary Remediation Goals) were detected in 31 of the 133 samples analyzed, at depths varying from five to 60 feet below ground surface.

The concentrations of all metals tested were below the California Total Threshold Limit Concentration (TTLC), but the copper concentration at one site exceeded the California Soluble Threshold Limit Concentration (STLC). Additional testing found the soluble concentration to be less than the STLC of five milligrams per liter (mg/L).

Although no numerical sediment quality objectives exist, sediment quality objectives are being developed by the State Water Resources Control Board (SWRCB). Therefore, sediment quality typically is characterized by comparing measured bulk sediment results to published sediment quality guidelines (Long et al. 1995) as follows:

- Effect Range Low (ER-L) = concentrations below which minimal toxic effects are expected; and
- Effect Range Medium (ER-M) = concentrations above which toxic effects are expected.

Sediment samples collected four times from August 1994 to January 1996 in Slip 1 and Slip 2 (which was subsequently filled) were analyzed for metals, chlorinated pesticides, PAHs, and total petroleum hydrocarbons (SAIC and MEC 1997). The results (Table E-1) indicate that copper, lead, mercury, nickel, zinc, and benzo(a)pyrene (PAH) concentrations were slightly elevated (above ER-L but below ER-M). DDE concentrations were slightly above the ER-M. Elutriate tests in 2001 indicated that chromium concentrations were slightly higher than at a reference site (URS 2004). The sediments in Slip 1 would be covered by the proposed fill and would no longer be in contact with marine waters and organisms.

Table E-1. Mean Concentrations of Pollutants in Sediments of Slip 1 and Slip 2			
Pollutant	**Concentration (ppm)**	**ER-L**	**ER-M**
Cadmium	0.50	1.2	9.6
Chromium	55.0	81	370
Copper	96.8	34	270
Lead	63.5	47	218
Mercury	0.48	0.15	0.71
Nickel	37.0	20.9	51.6
Silver	0.45	1.0	3.7
Zinc	180	150	410
Benzo(a)pyrene (PAH)	0.54	0.43	1.60
DDE	0.031	0.002	0.027
TRPH	1008	--	--
Source: SAIC and MEC 1997; Kinnetic Laboratories and ToxScan 2002.			

Sediments in Slip 3 were sampled in September 2006 (Weston Solutions 2006), with the chemical test results as summarized in Table E-2. The top layer consisted of 60.6 to 86.1 percent fine grained sediments while the bottom layer consisted of 33.3 to 52.6 percent fine grained material. For metals, arsenic, copper, mercury, and nickel were slightly elevated (above ER-L but below ER-M) in top sediments. Total PCBs, total detectable DDTs, six PAHs, and total low molecular weight (LMW) PAHs also were slightly elevated in top sediments. The concentration of contaminants in the upper layer of Slip 3 sediments to be dredged is generally much closer to the ER-L levels (i.e., concentrations below which minimal toxic effects are expected) than to the ER-M levels (i.e., concentrations above which toxic effects are expected), except for low molecular weight PAHs. Therefore, toxic effects would be low because the concentrations are close to the level where minimal effects are expected. None of the other contaminants tested in top sediments and no contaminants in the bottom sediments were elevated. Most PCBs, Arochlors, pesticides, and phenols were not detectable. Elutriate tests on the sediments found no contaminants to exceed water quality objectives for the protection of marine life (Weston Solutions 2006). This means that contaminants would not be released to the water at concentrations that could exceed water quality objectives during dredging or filling activities using these sediments.

Table E-2. Mean Concentration (mg/kg=ppm) of Contaminants in Sediments of Slip 3				
Pollutant	**Top Layer**	**Bottom Layer**	**ER-L**	**ER-M**
Arsenic	10.6	6.07	8.2	70
Cadmium	0.77	0.37	1.2	9.6
Chromium	44.3	25.1	81	370
Copper	63.8	29.3	34	270
Lead	38.1	15.7	46.7	218
Mercury	0.30	0.14	0.15	0.71
Nickel	25.3	18.3	20.9	51.6
Silver	0.15	0.13	1.0	3.7
Zinc	118	69.6	150	410
Total PCBs	47.1	8.3	22.7	180
Total Detectable DDTs	22.9	0.0	1.6	46.1
Acenaphthene	32.2	1*	16	500
Anthracene	124	5.8	85	1100
Benz[a]anthracene	312	13.7	261	1600
Benzo[a]pyrene	485	18.9	430	1600
Chrysene	504	21.4	384	2800
Dibenz[a,h]anthracene	85.2	3.1*	63	260
Total LMW PAHs	2121.7	105.3	552	3160
Notes: Concentrations are the higher value for composites from samples in the north and south portion of Slip 3. * = estimated value. LMW = low molecular weight PAHs *Source*: Weston Solutions 2006.				

Dredging projects in both the Inner and Outer Harbor areas have removed contaminated sediments, and the input of contaminants has decreased through discharge controls. In addition, some contaminated sediment areas have been covered by less contaminated sediments as part of recent landfill construction, thereby seal-

ing them from interchange with the overlying water. Nevertheless, some localized areas of contaminated sediments still remain.

In addition to the sediments to be dredged from Slip 3 (680,000 cy) and the soils to be excavated from Pier D and Berth F201 (1,290,000 cy) to be reused as fill, approximately 6,730,000 cy of material would be imported to complete the proposed landfills (Project only). The imported material would come from sources inside and outside the Harbor District. Potential sources of fill material from inside the Harbor District include the Main Channel Project (approximately 800,000 cy), the Western Anchorage Sediment Storage Site (approximately 1,290,000 cy), and the Pier S/Back Channel Project (approximately 2,350,000 cy). Additional fill would come from currently undetermined dredge and borrow locations, likely in the Outer Harbor area. All imported fill material would be required to undergo appropriate testing and notification to the USACE prior to placement within the Project fill. If used, contaminated sediments would be capped and isolated by the placement of uncontaminated materials on top and at the sides in accordance with regulatory requirements and permits. Approximately 1,404,000 tons of rock would also be used to cover excavated and reconstructed slopes and for fill containment dikes. The 768 pilings removed during demolition of Berths E24-E26 would be replaced when the berths are reconstructed, and new pilings would be installed for the Berth E24 wharf extension and the new Berth E23 wharf. A total of 2,707 new concrete pilings and eight steel pilings would be installed with just over half of the concrete piles in the water.

For Alternative 2 (315-Acre Alternative), 680,000 cy of material dredged from Slip 3 and 710,000 cy of soil excavated from Pier D would be reused as fill, and 1,840,000 cy of imported material would be required to complete the fill in Slip 1. The sources of this material would be the same as described for the Project and would require testing and notification of the USACE prior to placement within the fill. If used, contaminated sediments would be capped and isolated by the placement of uncontaminated materials on top and at the sides in accordance with regulatory requirements and permits. Approximately 445,000 tons of rock would also be used to cover excavated and reconstructed slopes and for fill containment dikes. The 768 pilings removed during demolition of Berths E24-E26 would be replaced when the berths were reconstructed, and new pilings would be installed for the Berth E24 wharf extension. A total of 1,804 new concrete pilings and eight steel pilings would be installed, with just over half of the concrete piles in the water.

F. Description of Proposed Discharge Sites

Under the Project, dredged, excavated, and imported material would be placed in Slip 1, at the south end of Berth E24, and in East Basin to create a net 54.6 acres of additional backlands in the Port. Approximately 1,404,000 tons of rock would be used to cover excavated and reconstructed slopes and for fill containment dikes. Approximately 173,000 cy of excess material from final surcharge of the new fill would be removed for use in other Harbor District projects. Under Alternative 2, dredged, excavated, and imported material would be placed in Slip 1 and at the south end of Berth E24 to create a net 24.7 acres of additional backlands in the Port. Approximately 445,000 tons of rock would be used to cover excavated and reconstructed slopes in Slip 3 and for fill containment dikes (Slip 1 and Berth E24). No material would be exported for use in other Harbor District projects.

G. Description of Disposal Methods

Fill placement would be by bottom-dump barge or discharge through a pipe from a suction dredge (Project and Alternative 2). Bottom-dump barges would be used until the water becomes too shallow for the barges to enter the fill areas. Then, fill would continue by use of a derrick barge or pump to offload the material from the barges into the fill site, or the material from dredging in Slip 3 could be pumped in via pipe. Once the fill is above the water level, fill material could also be brought in by truck. Rock riprap would be placed along the berths by derrick barge and a skip box. In some cases, large rocks could be placed individually. For the containment dikes, the rock could be pushed over the side of the transport barge or placed as described for the riprap.

III. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

The substrate to be dredged in Slip 3 and for keying in the containment dikes is predominantly silt and clay near the surface with more coarse grained (sand) material below. These sediments are at a depth of about -36 to -54 feet MLLW (Weston Solutions 2006). Excavation to widen Slip 3 in the Project and Alternative 2 and at Berth F201 for the Project would remove rock riprap and previous fill sediments. Approximately 212 pilings would be removed at Berths D29-D31. New rock riprap would be placed on the reconstructed slopes in the excavated areas. Contaminants in the sediments to be dredged and excavated are discussed above in Section II.E. In Slip 1 (Project and Alternative 2), the fill would cover predominantly fine, soft sediments on the bottom at a depth of about -45 feet MLLW and vertical bulkheads along the sides and end of the slip. Approximately 1,746 pilings would be removed during wharf demolition in Slip 1 prior to fill placement. A rock riprap containment dike would be constructed to keep the fill in Slip 1 until the fill in East Basin covers that dike. A rock riprap containment dike would be constructed at the west side of the East Basin fill to keep the fill material in place. Approximately 1,050 pilings would be removed during wharf demolition at Berths F6-10 prior to fill placement in East Basin (Project only). Approximately 2,707 new concrete pilings would be installed for Berths E23-E26 in the Project while 1,804 pilings would be installed for Berths E24-E26 in Alternative 2. A little over half of these would be in the water. A total of 410 linear feet of vertical bulkhead (sheet pile) would be installed along Berth E27 to provide slope stability in the Project and Alternative 2.

Dredging in Slip 3 (Project and Alternative 2) would remove benthic invertebrates living in and on the soft sediments and on the riprap and bulkhead while landfill construction would bury soft bottom and hard substrate (rock dike and bulkhead) biota in 63.5 acres for the Project and in 31 acres for Alternative 2. Sediments suspended by dredging would settle on benthic organisms in a narrow area of soft bottom adjacent to the dredging along the south end of Slip 3 and along the containment dikes (Project and Alternative 2). Some of these organisms would be buried. These losses in terms of acres are described in Final EIS/EIR Section 3.4, Biota and Habitats, and are summarized in Table E-3. The fill and excavation in Phase 2 would not occur for Alternative 2, resulting in 31 acres of habitat loss and 6.3 acres of habitat created for a net habitat loss of 24.7 acres. After dredging, the remaining soft sediments would be up to 10 feet deeper and would be recolonized by the same types of invertebrate communities. The new rock riprap, vertical bulkhead, and pilings would also be recolonized by the same types of invertebrate communities. Community re-establishment would occur within a few years.

Table E-3. Middle Harbor Project Habitat Impact Summary (acres)

Construction Phase	Location	345-Acre Alternative			315-Acre Alternative		
		Marine Habitat Loss/Gain[1]	Inner Harbor	Outer Harbor	Marine Habitat Loss/Gain[1]	Inner Harbor	Outer Harbor
1	Slip 1 fill	-25.6	-25.6	--	-25.6	-25.6	--
2	East Basin fill	-34.3	-10.0	-24.3	--	--	--
1	Pier E Extension	-5.4	--	-5.4	-5.4	--	-5.4
Total Habitat Loss		-65.3	-35.6	-29.7	-31.0	-25.6	-5.4
1	Slip 3 widening	+6.3	+6.3	--	+6.3	+6.3	--
2	Berth F201 excavation	+4.4	--	+4.4	--	--	--
Total Habitat Created		+10.7	+6.3	+4.4	+6.3	+6.3	--
Net Habitat Loss		-54.6	-29.3	-25.3	-24.7	-19.3	-5.4

Notes:
1. Water column, soft bottom, and hard substrate.

Acreages are approximate. + = gain and - = loss.

Actions Taken to Minimize Impacts. Dredging and excavation would occur for the Project and Alternative 2. The amount of dredging required for Alternative 2 would be slightly (approximately one percent) less than for the Project, while the amount of excavation would be about 40 percent less than for the Project. Dredging and excavation, in the Project and Alternative 2, would be limited to areas needed to allow access by larger container vessels to the berths. Contaminated sediments for both alternatives would be placed in an approved CDF using dredging and filling. Fill placement in Slip 1 (Project and Alternative 2) and East Basin (Project) would be behind rock dikes that would limit movement of the sediments during and after placement. Alternative 3 (Landside Improvements Alternative) and the No Project Alternative would involve no in-water construc-

tion and, therefore, would not result in impacts or require any impact mitigation measures for in-water activities.

B. Water Circulation, Fluctuation, and Salinity Determinations

Current Patterns and Circulation

Current Patterns and Flow. Circulation patterns in the Inner Harbor and Outer Harbor would change very little as a result of the proposed dredging, excavation, and filling activities. Slip 1 has no through flow (dead-end slip), and placement of fill in this slip for the proposed Project and Alternative 2 would not substantially affect current patterns and water flow in the adjacent East Basin. Widening and deepening Slip 3 (Project and Alternative 2) also would have minimal effects on current patterns and water flow. Placement of fill in East Basin (Project only) and excavation of Berth F201 would not substantially affect current patterns and water flow in the Outer Harbor or Back Channel.

Waves. Wave action in Middle Harbor would not change substantially as a result of the Project because waves entering East Basin are unlikely to be reflected or enhanced by Project structures (Project and Alternative 2).

Velocity. Tidal current velocities in Slip 3 would be slightly lower due to the increased water depth resulting from dredging in the Project and Alternative 2. Water velocity within Slip 1 (Project and Alternative 2) and East Basin (Project) would be reduced to zero as a result of the fill. Water velocities in the Back Channel and the remainder of Middle Harbor would not be altered by dredging in Slip 3 and placement of fill in Slip 1 and East Basin.

Stratification. The Project and Alternative 2 would not alter stratification in Harbor waters, nor would Alternatives 3 and 4 because they would not include any in-water activities.

Hydrologic Regime. No changes are anticipated for the Project or any of the alternatives.

Water Level Fluctuations

Tides would remain unchanged in the harbor as a result of the proposed dredging and excavation to widen Slip 3 and fill Slip 1 (Project and Alternative 2), and to fill the East Basin and excavate Berth F201 (Project) because no restrictions to tidal flow would occur. The tidal prism would be slightly reduced by the Project fill, but increased by the dredging and excavation for a net decrease since the amount of fill would exceed the amount of dredging and excavation. For Alternative 2, the amount of fill would exceed the amount of dredging and excavation by considerably less than for the Project. Since Alternatives 3 and 4 would not involve fill, excavation, or dredging, no effects on the tidal prism would occur.

Salinity Gradients

The Project would result in minor, localized changes in salinity gradients in the harbor during rainfall events. The fill in Slip 1 and East Basin would convert approximately 65 acres of open water to an impervious surface, and direct precipitation on that fill would be channeled to the harbor through storm drains. Excavation would increase the water surface by nearly 11 acres, with a net change of about 55 acres. In Alternative 2, the net increase in land surface would be approximately 25 acres. In the absence of fill, rainfall would have fallen evenly on the water surface. Discharging the stormwater runoff from the fill surface at specific points would locally reduce salinity in the adjacent harbor water until mixing occurs. Runoff from the remainder of the Project backlands would continue as in the past. No changes in salinity gradients would occur under Alternatives 3 and 4 because neither includes any fill or excavation.

Actions Taken to Minimize Impacts. No actions are necessary to offset the less than significant impacts expected on water circulation, water level fluctuations, and salinity gradients.

C. Suspended Particulate/Turbidity Determinations

Turbidity

In-water construction activities that involve excavation of existing fill, removal of the existing wharves and riprap, pile driving, rock riprap placement, and dredging would cause short-term increases in suspended sediments and turbidity. Following completion or interruption of dredging, the time required for suspended materials to settle-out, combined with the current velocity, would determine the size and persistence of the turbidity plume. Settling rates are largely determined by the grain size of the suspended material but are also affected by the chemistry of the particles and the receiving water (USACE and LAHD 1992). Dredging would occur in Slip 3 (Project and Alternative 2) and for keying-in the fill containment dikes for each construction stage (approximately 0.3 acres more for the Project than Alternative 2), while excavation would occur in Slip 3 (Project and Alternative 2) and at Berth 201 (Project). Dredging would resuspend bottom sediments, predominately silt, clay, and organic material, while in-water excavation (i.e., removal of existing fill to create open water) would suspend sediments from the fill being excavated. Dredging and excavation would occur 12 times over a 10-year period, lasting from 16 to 84 days each time, for a total of 528 days and an average of 44 days per year for the Project. For Alternative 2, these activities would occur nine times over five years, lasting from 16 to 70 days each time, for a total of 336 days and an average of 37 days per year. The plume durations are expected to be generally short, with the concentration of suspended solids returning to background levels within one to 24 hours after dredging stops (Parish and Wiener 1987). Sampling based on water transmissivity at 82, 164, and 328 feet from a pilot dredging project (USACE et al. 2002, Moore and Edmunds 2002) found the turbidity plume for clean sediments did not extend over 328 feet in the down current direction. A typical mixing zone in a permit for dredging is 328 feet (USACE 2002). Based on this information, turbidity from Project (and Alternative 2) dredging would affect a small area of the East Basin near the dredging site but would not substantially affect water quality outside the mixing zone. Therefore, water quality objectives for turbidity/light transmittance would not be exceeded outside the mixing zone, and effects on marine organisms would be minor and less than significant. No dredging or excavation would occur for Alternatives 3 and 4.

Placement of fill material in Slip 1 and the East Basin using bottom-dump barges would increase suspended sediments in the vicinity of the filling activities and has the potential to release contaminants to the water as the sediment falls through the water column to the bottom. Turbidity would occur within Slip 1 and in the East Basin throughout the filling process, but would be of short duration once filling is complete (USACE and LAHD 1992). The turbidity plume would extend approximately 650 feet or less from the discharge location (USACE 2002). Slip 1 is about 2,000 feet long and the portion of East Basin to be filled (Project only) is about 1,500 feet long. Thus, only turbidity from fill placed near the southern end of Slip 1 would be expected to reach East Basin, and turbidity from fill placed in East Basin would likely extend outside the fill area only when work is in the western part of the fill area. Construction of the containment dikes on the south side of the Slip 1 fill (Project and Alternative 2) and on the west side of the East Basin fill (Project only) would also restrict circulation in the fill areas. Therefore, potential effects from these activities would be less than significant.

For the Project, pile removal during wharf demolition and pile driving operations associated with wharf construction (about 948 piles for Berths E24-E26 and 493 for Berth E23 driven in water), as well as driving sheet piles for upgrades at Berth E27, would cause localized and temporary turbidity. Wharf and bulkhead demolition would occur seven times in eight years for a total of 800 days with a range of 65 to 182 days and an average of 114 days per year. Pile and bulkhead installation would occur 11 times in nine years for a total of 503 days with a range of eight to 126 days and an average of 46 days per year. Placement of new riprap for reconstruction of Berths E24-E26 and for fill containment would also cause localized and temporary turbidity. Rock placement would occur nine times in nine years for a total of 695 days with a range of 48 to168 days and an average of 77 days per year. Sediments would be suspended in the immediate vicinity of these activities, particularly during pile removal. As noted above, suspended sediments would settle rapidly (within hours), and turbidity levels would decrease once activities were completed. Therefore, effects on water quality and marine organisms would be minor and less than significant.

For Alternative 2, pile removal and driving would be the same as for the Project at Berths E24-E26 and Berth E27 (no piles would be driven at Berth E23). Wharf and bulkhead demolition would occur five times in four years for a total of 436 days with a range of 65 to 120 days and an average of 87 days per year. Pile and bulkhead installation would occur 10 times in six years for a total of 377 days with a range of 8 to 88 days and

an average of 38 days per year. Rock placement would occur seven times in five years for a total of 437 days with a range of 48 to 90 days and an average of 62 days per year. Thus, suspension of sediments and turbidity would occur over a shorter time period than for the Project. Therefore, effects on water quality and marine organisms would be minor and less than significant.

Secondary effects of backland improvements construction also would be minor as described below in Section III.H.

Effects on Chemical and Physical Properties of the Water Column

Dredging, excavation, and filling within Middle Harbor would have minor and temporary effects on water quality in the immediate vicinity of those activities. Terminal operations would also have minor effects on the water column. These effects are described in Final EIS/EIR Section 3.4 and summarized below.

Salinity. No change in salinity would occur as a result of construction. As described in Section III.B, *Salinity Gradients*, salinity gradients could be altered during stormwater runoff from the net increase in land surface of about 55 acres in the Project or 25 acres for Alternative 2, but salinity gradients would not be substantially altered by runoff from the existing terminal surfaces. These effects would be of short duration, occur in a limited area, and have minor effects on the water column. Terminal operations under Alternative 3 would not affect salinity gradients because the amount of runoff would remain essentially the same as prior to backland improvements. Alternative 4 would not change the backlands or generate any new runoff from those areas.

Clarity/Light Penetration. Turbidity in the immediate vicinity of dredging, excavation, fill placement, and pile removal would reduce water clarity in a small area for the duration of the activity in the Project and Alternative 2. The effects of turbidity are discussed in more detail above. Construction activities would not alter other factors that affect water clarity, such as phytoplankton abundance. Light penetration in the dredged areas would not be reduced in the long term. For Slip 3 (Project and Alternative 2) and East Basin (Project) fill areas, no water would remain so water clarity would not be applicable. Terminal operations under the Project or any of the alternatives would have minor effects, if any, on water clarity because runoff would be similar to that from the existing terminals.

Color. Color of harbor waters would be changed little if any due to Project or alternative construction activities, and operations would have no effects on color. Turbidity during placement of fill in the Slip 1 (Project and Alternative 2) and East Basin (Project only) could have minor, short-term effects on water color in those areas. Dredging, excavation, pile removal and installation, and rock placement for the Project and Alternative 2 would also produce turbidity that could have minor but less than significant effects on water color adjacent to the berths when the work is in progress.

Odor. Any odors resulting from construction activities would be expected to be localized, temporary, and less than significant.

Taste. Not applicable.

Dissolved Gases. Dissolved oxygen (DO) levels in aquatic habitats can be reduced by the introduction of high concentrations of suspended particulates. This is especially true if the particulates are from anaerobic sediments, which would place an oxygen demand on the surrounding waters. DO levels would be reduced in the immediate vicinity of dredging, excavation, pile removal and fill placement activities (Project and Alternative 2) by the introduction of high concentrations of suspended particulates and by the oxygen demand on surrounding waters from anaerobic sediments. Any reduction in DO levels, however, would be brief and of limited spatial extent. For example, a study in New York Harbor showed a small reduction in DO near the dredge but no reductions in DO levels 200 to 300 feet away from the dredging activities (Lawler, Matusky, and Skelly 1983). Further, a study of dredge material releases in San Francisco Bay showed only a three- to four-minute reduction in DO levels near the point of release (USACE and LAHD 1973). These results are consistent with the findings and conclusions from studies of the potential environmental impacts of open water disposal of dredged material conducted as part of the USACE Dredged Material Research Program (Lee et al. 1978; Jones and Lee 1978). Therefore, water quality objectives for DO would not be exceeded outside the mixing zone for either the Project or Alternative 2.

Nutrients and Eutrophication. Nutrients could be released into the water column during the dredging and excavation as well as filling operations (Project and Alternative 2), and could promote temporary growth of phytoplankton. Observations of previous dredge projects (including the Port of Los Angeles Deep Draft Navigation Improvement Project [USACE and LAHD 1992]) indicate that phytoplankton blooms have occurred during the spring while dredging was underway, although phytoplankton blooms are normal in the spring in the southern California bight (Gruber and McWilliams 2005, Nezlin and Li 2003). Dredging, excavation, and filling could release nutrients that may contribute to natural phytoplankton blooms, although there is no evidence that this has happened as a direct result of previous projects. The Basin Plan (RWQCB 1994b) limits on biostimulatory substances are defined as "…concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses." Given the limited spatial and temporal extent of Project activities with the potential for releasing nutrients from bottom sediments, significant adverse effects on phytoplankton populations and beneficial uses of the Middle Harbor area are unlikely to occur as a result of the Project or Alternative 2.

Toxic Metals and Organics. Testing of sediments to be dredged in Slip 3 (Project and Alternative 2) indicated slightly elevated concentrations, relative to ER-L and ER-M values, for several metals and organic compounds in top sediments but not in bottom sediments. Elutriate tests, however, found no contaminants that exceeded water quality objectives for the protection of marine life (Weston Solutions 2006). Testing of soils to be excavated for widening Slip 3 (Project and Alternative 2) indicated elevated concentrations of hydrocarbons and other organic compounds at several locations but concentrations of all metals were below threshold limits. Based on these results, dredging, excavation, and disposal of these sediments in the proposed landfills would not cause significant toxicity, contaminant bioaccumulation, or degraded water quality and adversely affect beneficial uses. Sections II.E and III.D provide a more detailed discussion.

Pathogens. No pathogens are expected to be released to harbor waters as a result of the Project or Alternative 2 dredging, excavation, and filling activities.

Temperature. Activities associated with the Project and alternatives would not affect water temperatures.

Other. The pH may decrease slightly in the immediate vicinity of dredging locations. This change would be caused by the reducing conditions found in the dredged sediments as the sediments are released into the water column. Seawater, however, is a buffer solution (Sverdrup et al. 1942) that acts to minimize changes in pH. Therefore, any measurable change in pH would be highly localized and short in duration with changes in ambient pH of less than 0.2 units. Thus, water quality objectives for pH would not be exceeded outside the mixing zone.

Actions Taken to Minimize Impacts. A Section 401 (of the Clean Water Act) Certification would be obtained from the Los Angeles Regional Water Quality Control Board for construction dredging, excavation, and filling activities that contains standard Waste Discharge Requirements (WDRs) and would specify receiving water monitoring requirements. Monitoring requirements typically include measurements of water quality parameters such as DO, light transmittance (turbidity), pH, and suspended solids at varying distances from the dredging, excavation, and filling activities. Analyses of contaminant concentrations (metals, DDT, PCBs, and PAHs) in waters near the dredging, excavation, or filling activities may also be required if the contaminant levels in the dredged, excavated, or discharged sediments are known to be elevated and represent a potential risk to beneficial uses. Monitoring data would be used by the Port's dredger to demonstrate that water quality limits specified in the permit are not exceeded. The dredging, excavation, and filling permit could identify corrective actions, such as use of silt curtains that would be implemented if the monitoring data indicate that water quality conditions outside of the mixing zone exceed the permit-specified limits.

Material imported for use as fill would be tested using standard EPA/USACE protocols prior to discharge into harbor waters to determine the suitability of the material for unconfined, aquatic disposal. Material not suitable for unconfined aquatic disposal would either not be used or placed in a CDF within the landfill.

Monitoring would be conducted to ensure that return water flow from discharge of fill material (i.e., material dredged or excavated from the harbor, or imported to the site, and used to create new landfills) behind the fill dikes meets theRWQCB WDRs for settleable solids and toxic pollutants.

A Municipal Stormwater and Urban Runoff Discharge Plan would be prepared and implemented for the Project or alternatives.

D. Contaminant Determinations

Contaminants, including metals and organics, could be released into the water column during the dredging, excavation, and pile removal/driving activities in the Project and Alternative 2. However, like turbidity, any increase in contaminant levels in the water is expected to be localized within the mixing zone and of short duration. The magnitude of contaminant releases would be related to the bulk contaminant concentrations of the disturbed sediments, as well as the organic content and grain size which affect the binding capacity of sediments for contaminants. Because the sediment characteristics vary across the Project site, the magnitude of contaminant releases and water quality effects would also vary. Elutriate tests on the sediments to be dredged in Slip 3 found no contaminants that exceeded water quality objectives for the protection of marine life (Weston Solutions 2006). For soils that would be excavated on the west side of Slip 3, soluble copper concentrations were found to be less than the STLC of five mg/L. Elutriate tests of sediments in Slip 1, where wharf demolition would occur, only found chromium concentrations to be slightly higher than at a reference site (URS 2004).

Suspended sediments containing contaminants would rapidly (within hours) settle to the bottom in association with the turbidity plume caused by dredging, excavation, and pile removal. The amount of contaminants redistributed in this manner would be small and localized, primarily within Slip 3 adjacent to the work area but also in Slip 1 and East Basin where wharf demolition would occur. Permit-required monitoring associated with previous dredging projects in the harbor has shown that substantial resuspension of contaminated sediments does not occur. Consequently, concentrations of contaminants in the sediments of East Basin adjacent to the dredged area would not be substantially increased by dredging activities because resuspension (followed by settling) of sediments is expected to be low. Filling Slip 1 (Project and Alternative 2) and a portion of East Basin (Project only) would cover the sediments from wharf demolition and dredging/excavation that settled in the fill area. These examples and scenarios demonstrate that contaminant releases from sediments disturbed by dredging, excavation, and other demolition/construction activities would not substantially affect the concentrations or bioavailability of contaminants in Middle Harbor.

Placement of fill in Slip 1 (Project and Alternative 2) and East Basin (Project only) would cover the existing sediments and associated contaminants. The fill would act as an isolation cap for the contaminated sediments and would eliminate the potential for exchanges between existing bottom sediments and overlying harbor water. The containment dike for the East Basin fill (Project) and Slip 1 fill (Alternative 2) would also isolate the fill from waters of Middle Harbor.

Accidents resulting in spills of fuel, lubricants, or hydraulic fluid from equipment used during dredging, excavation, fill placement, and wharf demolition and construction could occur during the proposed Project and Alternative 2. Accidents or spills from in-water construction equipment could result in direct releases of petroleum materials or other contaminants to harbor waters. The magnitude of impacts to water quality would depend on the spill volume, characteristics of the spilled materials, and effectiveness of containment and cleanup measures. However, the probability of such accidents is very low based on observations from similar work in the past.

Operation of terminal facilities would not result in any direct waste discharges to the harbor, other than stormwater discharges. However, increased transportation activities (truck and rail) relative to the NEPA Baseline associated with the Project (truck and rail) and Alternative 2 (rail only) could increase the amount of particulate and chemical pollutants settling from the air and brought in by vehicles (e.g., tires, fuel and lubricant leaks, and brakes) and cargo on the larger paved area. The amount of cargo (TEUs) would increase for the Project, Alternative 2, and Alternative 3. A portion of the pollutants from these sources would enter East Basin, primarily through stormwater runoff. Stormwater discharge sampling in the POLB in 2005 (MBC 2005) showed that pollutants such as metals and semi-volatile organic compounds were present in rain runoff before it entered harbor waters. However, no exceedances of water quality standards or objectives in receiving waters (i.e., the harbor) were reported for this sampling program. Thus, Project (and alternative) activities are unlikely to result in runoff of metals at concentrations that would exceed water quality standards.

The number of vessel calls at East Basin berths would decrease for the Project, Alternative 2, and Alternative 4 relative to the NEPA Baseline, but the new Pier E berths (Project and Alternative 2) would accommodate larger vessels than the existing berths. The amount of pollutants in clean water discharges from those vessels would be low because the Port prohibits discharge of polluted water or refuse to the harbor, but would add incrementally to the pollutants being discharged into harbor waters. Accidental spills on land that enter storm drains and from vessels while in East Basin could occur. Impacts to water and sediment quality would depend on the characteristics of the material spilled, such as volatility, solubility in water, sedimentation rate, and the speed and effectiveness of the spill response and cleanup efforts. However, continued use of existing pollution controls and implementation of improved storm drain infrastructure on the new fill and where storm drains are replaced would reduce the potential for pollutants to enter the harbor.

Actions Taken to Minimize Impacts. Dredged, excavated, and imported contaminated sediments would be placed and confined in disposal sites within the fill that are engineered and constructed in such a manner that the contaminants cannot enter harbor waters after the fill is complete, or they would not be used as fill. For accidental spills during construction, spill prevention and cleanup procedures for the Project or alternatives would be addressed in a plan that would be prepared and implemented by the construction contractor. The plan would define actions to minimize the potential for spills and provide efficient responses to spill events to minimize the magnitude of the spill and extent of impacts. The Port will require all tenants to comply with pollution control measures in the City of Long Beach Municipal Stormwater Permit and in the Long Beach Stormwater Management Plan that are applicable for their facilities.

E. Aquatic Ecosystem and Organism Determinations

Placement of fill in Slip 1 (Project and Alternative 2) and East Basin (Project only) would result in a permanent loss of aquatic habitat, including water surface, water column, soft bottom, and artificial hard substrate (pilings and vertical bulkheads), while excavation to widen Slip 3 (Project and Alternative 2) and at Berth F201 (Project only) would increase the amount of aquatic habitat. The net loss would be 54.6 acres under the Project and 24.7 acres under Alternative 2 (see Table E-3 for details of losses and gains). The exact amount of habitat gain and loss would be calculated by the Port and the agencies who are signatories to the Inter-Agency Bolsa Chica MOA after completion of the Project, on the basis of the “as-built” surveys.

Dredging to deepen Slip 3 would temporarily impact 21.1 acres of soft bottom habitat. Excavation to widen Slip 3 would remove pier pilings, riprap, and vertical bulkheads. The exposed “shore” on both sides of Slip 3 would be covered with rock riprap to stabilize the slopes, and new pilings would be installed for the reconstructed wharves (Project and Alternative 2). Rock riprap would be removed during excavation of Berth F201 and then replaced on the new slope (Project). About 0.3 acre of soft sediment would be dredged to key-in the dike for the East Basin fill (Project only).

The marine habitat created by excavation would replace an equal amount of habitat lost by fill because it would be of the same type and in the same general area of the harbor, and it would provide the same functions as the habitat lost to fill placement within a short period of time. Excavation of Pier D to widen Slip 3 (Project and Alternative 2) would create 6.3 acres of water surface in Middle Harbor during construction Phase 1. In addition to the water surface and water column habitat created in Slip 3, approximately 2.9 acres of soft bottom and 3.6 acres of rock riprap habitat would be created, replacing approximately 1.2 acres of vertical sheet pile habitat. Excavation at Berth F201 (Project only) would create 4.4 acres of water surface during Phase 2. At Berth F201, approximately 4.4 acres of new soft bottom would be created. The existing riprap habitat would be replaced by the same amount of new riprap along the excavated portions of the existing landfill. The new water column at both locations would be used immediately by plankton, invertebrates, and fish because these organisms would move freely from the adjacent waters into the new habitat. Planktonic organisms, such as copepods and ichthyoplankton, would be entrained in the water that moves into the excavated area while mobile species such as fish (e.g., northern anchovy, white croaker, and queenfish) would move in to use the new space for foraging and resting. The water surface could be used immediately by birds, such as gulls and aerial fish foragers. The new soft bottom would be colonized by invertebrates at a rate similar to that for dredged areas in Slip 3 (as described below under Effects on Benthos), and the new riprap would be colonized by algae and invertebrates in the same manner as other new riprap for the fill containment dikes. Based on surveys in Slip 1 and the channel south of East Basin (MEC Analytical Systems, Inc. 2002) as described in Final EIS/EIR Section 3.4.1.2, approximately 12 to 36 species of infaunal invertebrates would colonize the new soft bottom

and reach a biomass of about 15.5 to 39.5 grams per square meter (g/m^2). Fish would immediately use the spaces between the rocks for shelter.

Material from excavation to widen Slip 3 (Project and Alternative 2) would be used in construction of the 31-acre Phase 1 fill, while the material excavated from Berth F201 (Project only) would be used in constructing the 34.3-acre Phase 2 fill. Because excavation would occur immediately prior to placement of fill material, no temporal loss of water surface or water column habitat would occur for any of the excavated areas.

During operation of the terminal, stormwater runoff that could affect marine organisms would be similar to that from the existing terminals. The amount of impervious surface would be increased by about 54.6 acres under the Project and by about 25 acres for Alternative 2; however, as described in Final EIS/EIR Section 3.3, runoff from the fill surface would be conveyed to the harbor through storm drains. As noted above, vessel calls to the berths would decrease for all but Alternative 3, which would have the same number as the NEPA Baseline.

Effects on Threatened/Endangered Species

The only Federally listed species likely to be present in the Middle Harbor area is the California least term (*Sterna antillarum browni*). The California brown pelican (*Pelecanus occidentalis californicus*) is also likely to be present, however it was removed from the Endangered Species List in November 2009 (it remains a state-listed endangered species). The state-listed peregrine falcon (*Falco peregrinus*) could also be present. The Middle Harbor area is not considered an important area for California least tern or California brown pelican foraging and does not provide other important habitat values for the California least tern and only limited perching/resting sites for the California brown pelican. Dredging/excavation/filling activities (Project and Alternative 2) and the resultant temporary turbidity would affect few if any individuals of these species, and other foraging areas are available nearby if construction disturbances cause them to temporarily avoid the work areas. Foraging in the Project area could also continue with no adverse effects to either species compared to baseline conditions because no prey would be lost and only a small amount of potential foraging area would be temporarily affected.

The peregrine falcon feeds on other birds and would not be affected by Project or alternative construction activities because no prey would be lost and only a small amount of potential foraging area would be temporarily affected. The peregrine falcon foraging area potentially extends for miles (Grinnell and Miller 1986) and, thus, covers much of the harbor as well as land areas to the west and north. This species has nested on Gerald Desmond Bridge in the past, but backland construction and operation near the bridge would not adversely affect any peregrine falcons using this area. Proposed ground disturbances would not cause a loss of prey and noise would be similar to that from existing facilities in this industrial area.

Sea lions and possibly harbor seals (pinnipeds) could be present in low numbers in the Middle Harbor area (Final EIS/EIR Section 3.4.1.2), and sound pressure waves in the water caused by pile driving could affect their hearing. In water, sound transmission loss is between three and six dB per doubling of distance, with approximately 4.5 dB per doubling of distance in nearshore waters (Vagle 2003). However, at distances of less than about 330 feet (100 meters), the transmission loss (rate of attenuation) can be less (Caltrans 2007). For this project, marine mammals such as pinnipeds could experience sound levels approaching Level A harassment levels at around 330 feet (100 meters) from the pile driving. This estimate accounts for the size of the largest steel piles, the power of the hammer that would be required to drive them, the lower rate of attenuation close to the pile, and uncertainty in the sound propagation rate that depends on site-specific characteristics (Caltrans 2007). Consequently, a “soft start” environmental control would be included for Project pile driving procedures, meaning a gradual increase in the force and, consequently, the associated noise for these activities. In particular, for the soft start the pile driving hammer will be operated at less than full capacity (i.e., approximately 40–60 percent energy levels) with no less than a one-minute interval between each strike for a five-minute period. A soft start has been shown to gradually disperse any pinnipeds in the vicinity, thereby avoiding significant noise effects. Additionally, a qualified biological monitor would note (surface scan only) whether marine mammals are present within 100 m of the pile driving and, if any are observed, temporarily halt pile driving until the observed mammals move beyond this distance.

With the exception of pile driving, underwater noise levels associated with construction activities such as dredging would be below the Level A harassment (potential to injure) level of 180 dB_{rms} (re one µPa) for ma-

rine mammals (Federal Register 2005). Observations during pile driving for the San Francisco-Oakland Bay Bridge East Span seismic safety project showed sea lions swam rapidly out of the area when the piles were being driven (Caltrans 2001). Thus, sea lions would be expected to avoid areas where sound pressure waves could affect them. Harbor seals are unlikely to be present, as few have been observed in the Middle Harbor area (MEC Analytical Systems, Inc. 2002). Any harbor seals or California sea lions present in the Middle Harbor area during construction (Project and Alternative 2) would likely avoid the disturbance areas and thus would not be injured. Construction activities would not interfere with marine mammal foraging because the disturbances would be in localized areas and large foraging areas would remain available to them.

Although vessel transport of construction materials to the Project site from outside the POLB would occur at intervals over approximately 10 years, the potential for a Project-related vessel collision with a blue whale or gray whale, or a sea turtle, in offshore waters would be unlikely considering the small number of vessels relative to existing vessel traffic in this area (Project and Alternative 2). In addition, few blue whales and gray whales have been known to be struck by existing traffic within this area (Section 3.4 of the Final EIS/EIR). Furthermore, much of the Project-related vessel traffic would include barges carrying materials, such as rock, that travel at less than 10 knots. California sea lions and harbor seals are unlikely to be struck in offshore waters or within the harbor by these vessels due to their sparse distribution in the open ocean (and in the harbor) as well as their agility and ability to avoid damage by vessels.

Operation of new and upgraded terminal facilities in Middle Harbor (Project and alternatives) would not adversely affect any of the federally or state-listed bird species that could be present (California least tern, California brown pelican, peregrine falcon). Those species that currently use the area for foraging or resting could continue to do so because the Project would not appreciably change the industrial activities or cause a loss of habitat for those species. Operation of new and upgraded backland facilities in Middle Harbor (Project and Alternatives 2 and 3) would not measurably change the numbers or species of common birds in that area and, thus, would not affect peregrine falcon foraging. Perching locations for birds such as the California brown pelican would still be present. The number of vessel calls to the Middle Harbor container terminal would decrease (Project, Alternative 2, Alternative 4) or stay the same (Alternative 3) compared to the NEPA Baseline. Therefore, underwater sound in nearshore waters and in the harbor would not be increased by these vessels. The potential for whale or sea turtle strikes in offshore waters would not be increased because the number of vessel calls would not increase. No critical habitat for any Federally listed species is present in the harbor, so none would be affected by operation of the Project or alternatives.

Effects on Benthos

Benthic invertebrates living in and on the sediments to be dredged in Slip 3 (Project and Alternative 2) would be lost. At a biomass of 15.5 g/m^2 in soft bottom, approximately 1.3 metric tons of invertebrates living in the sediments would be temporarily lost. The habitat would be made permanently deeper by the dredging, but the sediments would be recolonized by the same types of invertebrates and communities, especially polychaetes, with the process starting shortly (hours to days) after the dredging stops in each location. A community similar to that currently present would be expected to develop within at least five years based on surveys in 1987 of areas dredged in 1982 (MEC 1988). This would represent a temporary loss in bottom community productivity and diversity and alteration of food available for fish and other marine organisms that feed on benthos in a small proportion of the Long Beach Harbor.

Excavation and wharf reconstruction (Project and Alternative 2) would result in a loss of approximately 186.7 metric tons of invertebrates on rocky dikes that would be replaced by colonization of the new dikes. The replacement of soft bottom with rocky dike would permanently remove 0.09 metric ton of invertebrates (Project only), but the rocky dike would be expected to be colonized by a diverse assemblage of marine organisms at a higher biomass (1,000 to over 13,000 g/m^2; MEC Analytical Systems, Inc. 2002) than that found in the soft-bottom sediments (15.5 g/m^2; MEC Analytical Systems, Inc. 2002) based on observed biomass of organisms in/on those habitats.

Benthic organisms in a narrow area of soft bottom adjacent to dredging areas and on the riprap, piles, and bulkheads along the berths would be subjected to temporary impacts from turbidity and sediment deposition generated by dredging. Lethal and sublethal effects that could occur include direct mortality, reduction in development and growth, reduced feeding, depressed filtration rates, and increased mucous secretion. Benthic

organisms exposed to turbidity could also be buried by sediments. However, impacts of turbidity and sediment deposition would be temporary with relatively rapid recovery of the benthic communities (months to years).

Placement of fill in Slip 1 (Project and Alternative 2) and East Basin (Project) would result in a permanent loss of soft bottom and hard substrate habitat for benthic organisms. Approximately 3.3 metric tons of soft bottom invertebrates would be lost for the Project and 1.6 metric tons for Alternative 2. Invertebrates living on the pilings removed and bulkheads/riprap covered with fill would also be lost, with fewer lost for Alternative 2 than for the Project.

Effects on Water Column Species

Placement of fill in Slip 1 would permanently remove 25.6 acres of water column habitat for marine organisms, while fill for the Berth E24 extension would permanently remove 5.4 acres (Project and Alternative 2). Placement of fill in East Basin (Project only) would permanently remove an additional 34.3 acres of water column habitat. Dredging of Slip 3 (Project and Alternative 2) would increase the water column habitat in that area. Excavation to widen Slip 3 (Project and Alternative 2) would add approximately 6.3 acres of water column habitat while excavation of Berth F201 (Project only) would add about 4.4 acres. The net loss of water surface would be 54.6 acres.

Planktonic organisms would be temporarily affected by turbidity within the water column. Turbidity can impact plankton populations by lowering the light available for phytoplankton photosynthesis and by clogging the filter feeding mechanisms of zooplankton. However, impacts to plankton would be short term and limited to the immediate vicinity of the dredging activities. Planktonic organisms have a naturally-occurring high mortality rate and their reproductive rates are correspondingly high, thereby allowing for rapid recovery from localized impacts. Elutriate tests on sediments similar to those to be dredged indicate that significant biological impacts are not expected from resuspension of sediments containing contaminants or mobilization of the contaminants into the water column (Final EIS/EIR Section 3.3). In addition, dilution by tidal waters moving into and out of the harbor would rapidly reduce concentrations of contaminants to levels that would not adversely affect marine organisms.

Fish in the water column and in or near the bottom would be temporarily disturbed by the dredge and fill activities as a result of turbidity, noise, displacement, and vibration. Most fish would leave the immediate area of the dredging, although some may stay to feed on invertebrates released from the sediments. No mortality of fish has been observed in the Outer Harbor as a result of dredging activities associated with the Deep Draft Navigation Improvements Project (Pier 400) (USACE and LAHD 1992). After dredging is complete, reduced numbers of invertebrates (until recolonization is complete) would reduce the food supply for some species of fish. However, those effects would be short term and localized.

The reduction in vessel calls to the berths (Project and Alternatives 2 and 4) would not adversely affect fish or plankton in the water column. The number of vessel calls would remain the same as the NEPA Baseline in Alternative 3.

Effects on Food Web

Dredging of Slip 3 would remove the top layer of sediments and the associated contaminants. This would decrease the potential for bioaccumulation of contaminants in aquatic organisms if the lower layers that are exposed by the dredging are not also contaminated. Placing any dredged sediments that are not suitable for unconfined aquatic disposal in a CDF could provide a benefit to water quality in the harbor by removing a pollutant source in an area for the Project and Alternative 2. Capping sediments in Slip 1 (Project and Alternative 2) and in East Basin (Project) would reduce the area where benthic invertebrates could come in contact with and potentially accumulate pollutants that could in turn be passed to other marine organisms, such as fish, through the food web (bioaccumulation). However, the placement of fill in those locations would result in a net loss of habitat for organisms within the food web (54.6 acres for the Project and 24.7 acres for Alternative 2).

Disturbance due to Project and Alternative 2 construction activities in the water would not significantly affect the food web in the harbor. After dredging is complete, reduced numbers of invertebrates (until recolonization is complete) would temporarily reduce the food supply for some species of fish. Impacts on fish populations in the harbor are expected to be short term and localized, because few individuals that feed on benthic inverte-

brates would be affected (low density in Slip 3), the area affected would be a small proportion of available foraging area in the Middle Harbor area, and other adequate foraging areas are present nearby. The loss of marine habitat resulting from fill of Slip 1 (Project and Alternative 2) and East Basin (Project) would not significantly affect the food web because no important foraging, breeding, or rearing areas, or marine species would be lost.

The potential for introduction of invasive exotic species due to vessel traffic would not increase due to the Project or alternatives because fewer (Project, Alternative 2, and Alternative 4) or the same (Alternative 3) number of vessel calls would be made at Middle Harbor berths. These vessels would come primarily from outside the Exclusive Economic Zone (EEZ) and would be subject to regulations to minimize the introduction of non-native species in ballast water. Thus, ballast water discharges during cargo transfers in the Port would be unlikely to result in the release of non-native species. The potential for introduction or spread of the invasive alga, *Caulerpa taxifolia*, as a result of Project operations is very low because the species is most likely introduced from disposal of aquarium plants and water, and is spread by fragmentation rather than from ship hulls or ballast water.

Effects on Special Aquatic Sites

No special aquatic sites (wetlands, mudflats, coral reefs, riffle and pool complexes, vegetated shallows, marine sanctuaries or refuges) are present in or near the Project site, including along the shipping channel from Queens Gate to Middle Harbor. Eelgrass beds, mudflats, and salt marsh wetlands are the only special aquatic sites within the harbor, and these are located far enough from the Project that no direct or indirect effects would result from Project activities (Section 3.4 of the Final EIS/EIR).

Effects on Essential Fish Habitat

The Essential Fish Habitat (EFH) analysis in the Final EIS/EIR indicates that the neither the Project nor Alternative 2 would have significant effects on the Fisheries Management Plan (FMP) species that are rare or uncommon in the Middle Harbor area, such as California skate, big skate, California scorpionfish, and black rockfish because few if any individuals would be present in the disturbance area (MEC Analytical Systems, Inc. 2002). The net loss of marine habitat due to placement of fill and excavation (54.6 acres for the Project and 24.7 acres for Alternative 2), however, would result in a substantial loss of habitat for the FMP species that use Middle Harbor, including water column and benthic habitats. Both habitats provide food sources for FMP species occurring in the Project region. Dredging, pile removal, and wharf construction/reconstruction at Berths E24-E27 (Project and Alternative 2) and Berth E23 (Project only) along with excavation at Berths D29-D31 (Project and Alternative 2) and F201 (Project only) also could affect FMP species through habitat disturbance, turbidity and resuspension of contaminants from sediments, and vibration from pile and sheetpile driving and stone column installation. These effects would be temporary and would occur at intervals throughout the construction period, with a return to baseline conditions following construction. Therefore, no permanent loss of habitat would occur from the wharf work, and few, if any, individual fish would be lost because most individuals would avoid the work area.

Construction activities on land would have no direct effects on EFH, which is located in the water. Runoff of sediments from construction, however, could enter harbor waters. As discussed in Final EIS/EIR Section 3.3, Hydrology and Water Quality, implementation of sediment control measures would avoid or minimize runoff so that no significant effects would occur.

Operation of Project facilities would have minimal effects on EFH or managed fish species. The number of vessel calls per year would remain the same (Alternative 3) or decrease (Project, Alternative 2, and Alternative 4) relative to the NEPA Baseline. Due to runoff control measures, runoff from the new terminal would be essentially the same as under baseline conditions for existing backlands, with a minor addition of pollutants from new fill surfaces. This runoff would not adversely affect EFH or FMP species.

Effects on Other Wildlife

Terrestrial wildlife in the Project area is limited to those species adapted to industrial areas, and no wildlife migration or movement corridors are present. Individuals of water-associated bird species that are resident or transient visitors to the harbor forage over or in the water, or may rest on the water surface. However, few individuals of these species would occur in the Project area, and those present during construction (Project

and Alternative 2) could use other areas of the harbor for the duration of the disturbance. The water surface lost in Slip 1 (Project and Alternative 2) and in East Basin (Project) would be a small proportion of the habitat available for birds in the harbor and does not represent important habitat for nesting or foraging. No substantial impacts to those species would occur. No loss of surface water habitat would occur in Alternatives 3 and 4.

Actions Taken to Minimize Impacts. Unavoidable losses of marine habitat in the Long Beach/Los Angeles Harbor complex are mitigated by the use of habitat credits from mitigation banks created by the two ports. This policy was developed by the USACE, U.S. Fish and Wildlife Service (USFWS), NOAA Fisheries, and California Department of Fish and Game (CDFG) in consultation with the ports and has been applied to Port development projects for the past 20 years. The goal of the mitigation policy is "no net loss of in-kind habitat value," where in-kind refers to marine tidal water of value to fish and birds. Given the infeasibility of undertaking any substantial onsite mitigation and the public interest mandate of accommodating maritime cargo conferred upon the Port by the California Coastal Act, offsite mitigation is allowed between Point Conception and the Mexican border (area of ecological continuity). Implementation of mitigation measures shall occur prior to or concurrent with Project activities. The preferred mitigation is the restoration of coastal embayment habitat (i.e., tidal wetlands).

Accordingly, the two ports have undertaken several wetlands restoration projects (e.g., Anaheim Bay and Batiquitos Lagoon) that generated habitat mitigation credits. The most recent credits have been generated by funding a multi-agency project to restore tidal wetland habitats in the Bolsa Chica lowlands in Orange County. The credits were vested via the Inter-Agency Bola Chica Memorandum of Agreement (MOA) that was negotiated in 1996 and amended in 2003 to provide in-kind credits for Port fills. The parties to the MOA include NOAA Fisheries, USFWS, CDFG, USACE, California Coastal Conservancy, Ports of Los Angeles and Long Beach, EPA, California Resources Agency, and California State Lands Commission (CSLC). Thus, the MOA incorporates all applicable federal and state agencies and their associated mitigation policies.

For the proposed Project, habitat credits from restoration of Bolsa Chica would be used to offset the 54.6-acre loss of marine habitat in accordance with the MOA. The entire Slip 1 fill (25.6 acres) and 10 acres of the East Basin 34.3-acre fill would constitute Inner Harbor habitat, while the remaining 24.3 acres of East Basin fill and the 5.4-acre Pier E extension fill would constitute Outer Harbor habitat. Widening Slip 3 would result in the creation of 6.3 acres of Inner Harbor habitat leaving a net loss of 29.3 acres of Inner Harbor habitat. Excavation at Berth F201 would result in the creation of 4.4 acres of Outer Harbor habitat, leaving a net loss of 25.3 acres of Outer Harbor habitat.

To mitigate these losses, Bolsa Chica credits would need to be applied as follows: 14.7 credits to mitigate 29.3 acres of Inner Harbor fill at a ratio of 0.5 credit:one acre of fill; and 25.3 credits to mitigate the Outer Harbor fill at a ratio of 1:1, for a total of 40 credits. As noted above, the completed Project could result in the use of more or fewer credits, but the difference would only be four or five credits at most, meaning that actual mitigation credits needed would be between 35 and 45. Currently, the Port has approximately 270 Bolsa Chica credits remaining in its account. Therefore, sufficient credits remain in the Port's account to mitigate the marine habitat lost due to Project construction even if the as-built survey results show the need for as many as 45 credits.

For Alternative 2, habitat credits from the Bolsa Chica mitigation bank would be used to offset the 24.7-acre loss of marine habitat in accordance with the MOA. All of the loss would be Inner Harbor habitat requiring approximately 12.4 credits.

Other in-water work, such as dredging and wharf construction/reconstruction, would result in temporary impacts to marine organisms under the Project and Alternative 2. The amount and duration of construction disturbances would be less for Alternative 2 than for the Project. These impacts would be minimized by limiting the work area and duration of the work to the minimum necessary to complete the dredging and wharf construction activities.

F. Proposed Disposal Site Determinations

Mixing Zone Determinations

Mixing zones would need to be established through the RWQCB Section 401 Water Quality Certification for turbidity from the filling activities. A mixing zone for the Slip 1 and East Basin fills would be needed for the Project, and also would be needed for Slip 1 in Alternative 2. Effects of the proposed Project on water quality and biological resources outside the mixing zones would be less than significant because contaminated sediments would be handled and disposed in accordance with applicable regulations, and applicable Best Management Practices (BMPs) would be used to control turbidity.

Compliance with Applicable Water Quality Standards

The Project or alternatives would be implemented in accordance with all applicable Federal and state water quality standards. Some of the measures to be implemented for in-harbor work to ensure compliance with these standards include:

- Soils to be used for fill will be tested for contaminants prior to placement in the proposed landfills to determine disposal method;
- Contaminated soils and dredge material will be placed in a CDF or not used in the fill; and
- Monitoring will be conducted to ensure compliance with permit conditions.

Potential Effect on Human Use Characteristics

Recreational and Commercial Fisheries. No recreational or commercial fisheries are present in the Project area.

Water-Related Recreation. Not applicable. No recreation sites are present in or adjacent to the Project area.

Municipal and Private Water Supply. Not applicable.

Aesthetics. Filling Slip 1 (Project and Alternative 2) and East Basin (Project) would not adversely affect aesthetics of the Middle Harbor area. The fill areas are located within an industrial area of the Port, and loss of 54.6 acres of surface water (Project) or 24.7 acres (Alternative 2) would not represent a substantial reduction in the amount of water visible to the public. Turbidity during placement of the fill would have temporary effects on aesthetics. No landfilling would occur under the other alternatives.

Flooding. Although portions of the Project site are located within the 100-year flood zone, Project or alternatives construction would not increase the potential for flooding onsite because drainage would be maintained in accordance with all applicable regulations. Site elevations would remain generally the same as a result of Project (or alternative) construction, and runoff would be directed to storm drains.

Project construction would increase the land surface area upon which precipitation would fall by a net increase of 54.6 acres. In Alternative 2, the increase would be 24.7 acres. Drainage slopes and storm drains would be installed during development of the fill surface to adequately handle storm runoff without flooding, even though development of terminal facilities on the fill would increase the impermeable surface present and, thus, the volume of surface runoff. Redevelopment of the existing backlands (Project, Alternative 2, and Alternative 3) would increase the amount of impermeable surfaces where unpaved areas are paved, but this would not increase the potential for flooding because existing storm drains would be sufficient to carry the runoff to the adjacent harbor waters.

Project or alternatives operations would not increase the potential for flooding onsite. Existing and new storm drains are designed to convey water from a 10-year storm. Runoff associated with a larger storm could exceed the capacity of the storm drain system, resulting in temporary and localized ponding. Site elevations, however, would remain generally the same as existing conditions, and the risk of flooding on existing backlands would not be increased above that under baseline conditions. For the new fill areas (Project and Alternative 2), the

potential for flooding would be the same as on the existing backlands. Because the Project facilities would be part of a paved container terminal, any flooding that did occur would not result in a loss of life, substantial property damage, or harm to sensitive biological resources.

Actions Taken to Minimize Impacts. Implementation of BMPs and monitoring to ensure compliance with permit conditions would minimize impacts of turbidity on aesthetics.

G. Determination of Cumulative Effects on the Aquatic Ecosystem

A number of the cumulative projects listed in the Final EIS/EIR (Table 2.1-1) would directly affect marine biological resources through fill (approximately 277 acres of which about 105 acres are completed or under construction), dredging, wharf construction/reconstruction, installation of boat slips, artificial reef construction, and/or rocky dike construction. Wharf construction and reconstruction would also result in underwater sound pressure waves from pile driving that could affect marine mammals and fish. Increased vessel traffic associated with some of the cumulative projects would increase the potential for introduction of invasive species. Further, all of the cumulative projects would have the potential to indirectly affect marine biological resources through runoff of sediments and pollutants as a result of construction and operations activities on land.

Special Status Species. Three cumulative projects have the potential to adversely affect the California least tern, an endangered species, and those cumulative impacts would be significant but feasibly mitigated. Increased vessel traffic as a result of the cumulative projects would have less than significant cumulative impacts within the harbor because few marine mammals would be affected (small numbers are present in the harbor), individuals would avoid the vessels, and overall underwater noise levels would not be significantly increased. Further, the environmental controls described in Section III.E (soft start for pile driving and use of a biological observer for marine mammals) would also serve to avoid significant effects. The cumulative increase in vessel traffic, particularly large vessels travelling at greater than 10 knots, would increase the potential for vessel strikes of whales. Mortality of blue whales is a particular concern, and cumulative impacts would be significant and unavoidable for this species. The Project and alternatives would not contribute to cumulative effects on the least tern because this species would not be affected, and the Project (and alternatives) would not make a cumulatively considerable contribution to cumulative effects of vessel sound on marine mammals because the same or fewer vessel calls (relative to the NEPA Baseline) would occur. Project-related vessel strikes to blue whales would be unlikely to occur, and the decrease in vessel calls (Project, Alternative 2, and Alternative 4) would not contribute to significant and unavoidable cumulative impacts associated with vessel strikes to that species. For Alternative 3, the number of vessel calls would be the same as the NEPA Baseline and would not change the potential for blue whale strikes, resulting in no contribution to cumulative impacts.

Loss of Marine Habitat. Numerous landfill projects have been constructed in the harbor since the harbor was first developed, and these projects have resulted in a generally unquantified loss of marine habitat. The more recent losses have been mitigated by use of mitigation bank credits. Six of the cumulative projects would involve placement of fill, totaling a loss of approximately 277 acres of marine habitat. These losses would be mitigated through use of existing mitigation bank credits from offsite marine habitat restoration through agreements with regulatory agencies. Therefore, cumulative impacts would be less than significant. The Project would contribute 54.6 acres, or about 16 percent, of the approximately 332 acres of fill recently completed or proposed for the harbor (including the Project). Alternative 2 would contribute 24.7 acres, or about 7.7 percent, and Alternatives 3 and 4 would not result in any loss of marine habitat. The Project and Alternative 2 would make cumulative considerable contributions to habitat loss prior to mitigation, but impacts would be mitigated to less than significant levels through use of mitigation bank credits. Alternatives 3 and 4 would not contribute to cumulative impacts.

Essential Fish Habitat. EFH has been and will be lost due to past, present, and future landfill projects in the harbor. EFH protection requirements began in 1996, and thus, only apply to projects since that time. Since 1996, the loss of EFH has been significant but mitigated, as described above for the recent marine habitat losses. The permanent marine habitat loss from the Project and Alternative 2 includes EFH, and would contribute to cumulatively considerable effects on EFH prior to mitigation. However, cumulative impacts would be mitigated to less than significant.

Natural Habitat, Special Aquatic Sites, and Wetlands. Natural habitats, special aquatic sites, and wetlands currently have a limited distribution and abundance in the harbor. The 40-acre Pier 300 expansion project caused a loss of eelgrass beds that was mitigated. The Southwest Slip fill in West Basin completed as part of the Channel Deepening Project resulted in a small loss of saltmarsh that also was mitigated. Losses of eelgrass, mudflats, and saltmarsh from early landfill and harbor development projects are quantitatively unknown but likely were significant. Future projects could affect these habitats, such as the mudflat at Berth 78 could be affected by the San Pedro Waterfront project. Thus, impacts to these habitats are considered cumulatively significant. The Project and alternatives, however, would not contribute cumulatively considerable effects on any of these habitats.

Wildlife Migration Corridors. The cumulative projects would have no cumulative impacts on migration or movement of fish and terrestrial wildlife because no known migration corridors would be affected. Blue and gray whale migration along the coast would not be adversely affected by increased vessel traffic. The Project or alternatives would not affect migration or movement of fish and wildlife and, therefore, would not contribute to cumulative effects.

Biological Communities. Construction activities in harbor waters associated with the cumulative projects, such as dredging, excavation, and wharf construction, would remove soft bottom habitat as well as temporarily remove artificial hard substrate habitat (e.g., piles and rocky dikes). In general, the rocky dikes would be replaced and new pilings would be installed. The effects of such activities are generally of short duration, affect small, localized areas, and do not occur simultaneously for all projects. Because recolonization of dredged areas and new in-water structures begins quickly (hours to days) and proceeds rapidly (months to years), these areas would generate typical productivity and food sources for other species such as fish within a relatively short time. Accordingly, multiple projects spread over time would not result in a substantial reduction in the forage base that could affect predatory species. Temporary in-water construction disturbances that can cause fish and marine mammals to avoid the work area would not substantially alter the distribution and abundance of these organisms due to the cumulative projects. Consequently, cumulative impacts of such disturbances on local biological communities would be less than significant because the effects would be dispersed in time and space. Project and Alternative 2 construction activities related to dredging, excavation, and wharf construction would have less than significant impacts on local biological communities, and these activities would not contribute substantially to cumulative impacts of other projects that could take place concurrently. Alternatives 3 and 4 would not affect marine biological communities.

Runoff from temporary disturbances on land during construction of cumulative project facilities would not occur simultaneously, but rather would be spread over time so that total runoff to harbor waters would be dispersed, both in frequency and location. Cumulative impacts would be less than significant due in part to this dispersal, in part because cumulative project levels of development in the harbor would affect minimal amounts of land, and in part because runoff control measures such as Stormwater Pollution Prevention Plans (SWPPPs), would be implemented as required in project permits. The contribution to this runoff from the Project or alternatives would not be cumulatively considerable due to implementation of a SWPPP.

Cumulative projects would have temporary and less than significant impacts on terrestrial biota and habitats during construction that would result in less than significant cumulative impacts on local biological communities. This is because these projects would only affect small areas at a time and would have minimal effects on biological communities, many of which are comprised of landscape or disturbed area species, in industrial areas. The Project and alternatives would not result in any cumulatively considerable effects on terrestrial biological communities because they would have minimal effects on terrestrial habitats in an existing industrial area.

Several of the cumulative projects would add vessel traffic to the harbors above baseline levels, thus increasing the risk of invasive species introduction. Many non-native species have already been introduced into the harbor and this would continue with the potential to have significant cumulative impacts on local biological communities. However, current ballast water regulations would reduce the potential for introducing invasive species to the harbor. As vessel traffic would be reduced by the Project, Alternative 2, and Alternative 4 and remain the same for Alternative 3 compared to the NEPA Baseline, the Project and alternatives would not contribute to cumulative impacts.

Past landfills in the harbor have altered water circulation, but not to the extent that local biological communities are substantially affected. Present and future landfill projects would have minor effects on water circulation because fill areas generally occur in dead-end slips with no through passage of water. Thus, cumulative impacts on water circulation would be less than significant. The proposed Project would add a small amount of fill, and Alternative 2 would add an even smaller amount, neither of which would substantially alter water circulation and nor contribute to cumulatively considerable effects.

H. Determination of Indirect/Secondary Effects on the Aquatic Ecosystem

Project construction activities related to filling the subsided area at the southwest end of Pier E, railyard improvements, development of facilities on the new landfills, and redevelopment of approximately 294 acres of backlands could result in temporary impacts on marine water quality through surface water runoff containing asphalt leachate, concrete washwater, and other construction materials, particularly during the rainy season. It is assumed that any contaminated soils would be remediated prior to construction. For Alternative 2, the amount of new landfill developed would be less than for the Project. Under Alternative 3, no development of facilities would occur on new land because no landfills would be constructed, but all other backland work would occur as described for the Project. Under Alternative 4, no backlands improvements would be constructed.

Runoff of construction-related contaminants other than soils from onshore construction sites would enter harbor waters primarily through storm drains. Most runoff would occur during storm events, although some could occur during use of water as part of construction activities. Standard BMPs, such as sediment barriers, sedimentation basins, and site contouring would be implemented during construction activities to minimize runoff of contaminants dissolved in water and adsorbed on soil particles, thus complying with the State General Permit for Stormwater Discharges Associated with Construction Activity (Water Quality Order 99-08-DWQ) and the Project SWPPP. Sediment control measures generally have an average efficiency of approximately 70 percent, although efficiencies can be higher, particularly for coarser materials such as sand (EPA 1993). Thus, a small amount of pollutants associated with soils could reach harbor waters via storm drains, but this runoff would be rapidly diluted by rainfall and mixing in the immediate vicinity of the drain discharge.

Effects of runoff on DO, pH, and nutrient levels would be minor and limited to the vicinity of drain discharge locations because control measures would prevent the runoff of materials that could cause water quality standards to be exceeded. The small amount of pollutants that could pass the control measures would not result in a major input. No substances that are identified in the 303(d) list for the Inner Harbor (e.g., DDT and PCBs) would be used during construction, but some could be present in soils that would be disturbed during construction activities (Final EIS/EIR Section 3.1). These substances generally have a very low solubility in water and remain adsorbed on sediment particles. Control of soil runoff from contaminated areas would be in accordance with all applicable regulations and would prevent these substances from entering harbor waters.

If dewatering activities were required for the Project or Alternatives 2 and 3 construction, shallow groundwater collected from the dewatering activities may contain unacceptable levels of contaminants that would affect the ability for discharge into nearby drainages and harbor waters. Any Project-related dewatering activities would be required to either discharge into the sanitary sewer, under permit with the City of Long Beach Sanitation Bureau, or comply with the NPDES permit regulations and an associated SWPPP regarding discharge into storm drains and/or directly into harbor waters. Such permit requirements typically include onsite treatment to remove pollutants prior to discharge. Alternatively, the water could be temporarily stored onsite in holding tanks, pending offsite disposal at a facility approved by the RWQCB. Incorporation of NPDES-mandated SWPPP elements would ensure that potential pollutants encountered during excavation would be isolated and collected for transportation to a licensed facility or treatment prior to their discharge into the storm drain system.

Based on past history for this type of work in the harbor, accidents resulting in spills of fuel, lubricants, or hydraulic fluid from equipment used during dredging, excavation, filling, and wharf demolition and construction are unlikely to occur during the Project or Alternative 2. Consequently, there would be a low potential for adverse affects on water quality from these sources. Most spills of this nature would be small and cleaned up immediately. Accidental leaks and spills during onshore construction activities (Project, Alternative 2, and Alternative 3) would also have a very low probability of occurring and entering storm drains due to implementa-

tion of BMPs (e.g., containment measures, sediment barriers, and sedimentation basins) that would be stipulated in the Project SWPPP. Most spills on land are expected to be small and contained within the work area. Existing regulations, such as the General Construction Activity Stormwater Permit and Long Beach Storm Water Management Plan (LBSWMP) that include requirements to avoid or minimize effects on water quality during construction activities would be implemented during the Project.

Operation of terminal facilities on the new landfills and existing backlands would add approximately 54.6 acres of new paved landfill (Project), or 24.7 acres of new paved landfill (Alternative 2), and small, newly paved areas on the existing backlands that would increase the amount of impervious surface. Paving of these surfaces would reduce the amount of soil that could run off to harbor waters as a result of wind or water erosion. Although some soil would be carried into the harbor via storm runoff from the small remaining unpaved areas (primarily landscaped areas), the Project would not result in substantial erosion and sediment deposition in harbor waters due to implementation of required sediment control measures, presence of vegetation to stabilize soils, and the small amount of unpaved area present.

Proposed terminal operations would not result in any direct waste discharges to the harbor, other than stormwater discharges. However, increased transportation activities (truck and rail) associated with the Project could increase the amount of particulate and chemical pollutants settling from the air and brought in by vehicles (e.g., tires, fuel and lubricant leaks, and brakes) and cargo on the larger paved area. A portion of the pollutants from these sources would enter East Basin, primarily through stormwater runoff. Stormwater discharge sampling in the POLB in 2005 (MBC 2005) showed that pollutants such as metals and semi-volatile organic compounds were present in rain runoff before it entered harbor waters. Only copper, lead, nickel, and zinc were found in concentrations that could have the potential to exceed the standards for marine waters at a few locations. No exceedances of water quality standards or objectives in receiving waters (i.e., the harbor) were reported for this sampling program. Project or alternative activities are unlikely to result in runoff of metals at concentrations that would exceed water quality standards.

Aerial deposition of pollutants from Project non-electric equipment, vehicle, and vessel operations would occur on land with a minor amount on the surface of harbor waters (Project and all alternatives). Pollutants deposited on land could be washed into harbor waters in storm runoff. This deposition would represent a small amount of pollutants that would periodically enter the harbor. Past monitoring indicates that these inputs would not cause concentrations in harbor waters to exceed any regulatory standards or objectives, and no DDT or PCBs would be in the Project or alternative aerial fallout because these chemicals would not be used during proposed operations.

Actions Taken to Minimize Impacts. Standard BMPs, such as sediment barriers, sedimentation basins, and site contouring, would be used during construction activities to minimize runoff of soil and contaminants dissolved in water and adsorbed on soil particles in compliance with the State General Permit for Stormwater Discharges Associated with Construction Activity (Water Quality Order 99-08-DWQ) and the Project SWPPP. Examples of BMPs that would be included in the SWPPP include:

- Equipment shall be inspected regularly (daily) during construction, and any leaks found shall be repaired immediately;
- Refueling of vehicles and equipment shall be in a designated, contained area;
- Drip pans shall be used under stationary equipment (e.g., diesel fuel generators), during refueling, and when equipment is maintained;
- Drip pans that are in use shall be covered during rainfall to prevent washout of pollutants; and
- Monitoring to verify that the BMPs are implemented and kept in good working order.

Continued use of existing pollution controls and implementation of improved storm drain infrastructure on the new fill and existing backlands (Project and Alternative 2) would reduce the potential for pollutants to enter the harbor. As described in the City of Long Beach Municipal Stormwater Permit, the Port will require all tenants to comply with all applicable pollution control measures stipulated in the City of Long Beach Municipal Stormwater Permit and in the LBSWMP. Other sources of pollutants that could accumulate in sediments of the East

Basin include accidental spills on land that enter storm drains and accidental spills from vessels while at berth. Impacts would depend on the material spilled, speed of cleanup, and sedimentation rate of the material.

IV. FINDINGS

Evaluation of Compliance with 404(b)(1) Guidelines (restrictions on discharge, 40 CFG 230.10).

No adaptations of the Section 404(b)(1) Guidelines were made relative to this evaluation.

A. Alternatives Test

__ Yes __X__ No (1) Based on the discussion in Section II.D, are there available, practicable alternatives having less adverse impacts on the aquatic ecosystem and without other significant adverse environmental consequences that do not involve discharges into "waters of the United States" or at other locations within these waters.

Discussion: The Final EIS/EIR evaluated the proposed Project and three alternatives, including the 315-Acre Alternative, Landside Improvements Alternative, and the No Project Alternative, the latter two of which would not involve a Federal action (Section II.D). A number of other alternatives were considered but not carried forward for analysis for the reasons described in Section 1.6.2 of the Final EIS/EIR and in Section II.D for an alternative identified by the EPA during the Draft EIS/EIR public review period. The proposed Project (345-Acre Alternative) would create approximately 65 acres of new landfill in Slip 1 and the East Basin. The Project would rehabilitate or replace deteriorated and obsolete terminal facilities; provide deeper water (-55 feet MLLW) at berths and in basins and channels; create new land; modernize marine terminal facilities; and implement environmental controls to accommodate a portion of the predicted future increases in containerized cargo volume and the modern, larger cargo vessels that are expected to transport these goods to and from the Port. The existing 294-acre Project site would be increased to 345 acres, including 54.6 net acres of newly created land. The Project includes terminal consolidation, redevelopment, and expansion on areas of existing and newly created land, dredge and fill operations, wharf construction to create three deep water berths with -55 feet MLLW depths, and rail infrastructure improvements. When optimized at maximum throughput capacity (by year 2025), the consolidated container terminal would be designed to accommodate approximately 3,320,000 TEUs per year. This approach is consistent with the Coastal Zone Management Act and the California Coastal Act that encourage modernization of existing facilities within existing Port boundaries.

Alternative 2 (315-Acre Alternative) would add 24.7 net acres of newly created land to the existing 294-acre Project site by filling Slip 1 between Piers E and F (Berths E12-E14 and F1-F4). This alternative would include terminal expansion on adjacent areas of existing and newly created land, dredge and fill operations, and new wharf construction. Under the 315-Acre Alternative, a new wharf would be constructed to handle increased cargo throughput and accommodate deep-draft container ships, and to replace existing, insufficient wharves. The new 2,900-foot wharf would consist of two deep water berths with -55 feet MLLW depth. When optimized at maximum throughput capacity (anticipated by approximately 2025), the consolidated container terminal would be designed to accommodate approximately 2,870,000 TEUs per year.

Alternative 3 (Landside Improvements Alternative) would redevelop existing terminal areas on Piers E and F and convert underutilized land north of the Gerald Desmond Bridge and Ocean Boulevard within the Project site to a container yard. Under this alternative, there would be no in-water activities (e.g., dredging, filling Slip 1 and the East Basin, new wharf construction) as proposed for the Project, no wharf upgrades would occur (except the provisions for shore-to-ship power), and channel and berth deepening would not occur. When optimized at maximum throughput capacity (anticipated by approximately 2025), the terminals would be designed to accommodate a combined total of about 2,910,000 TEUs per year.

Alternative 4 (No Project Alternative) would maintain the current CUT and LBCT container terminals at a combined size of 294 acres and in their current configuration. This alternative would not

allow implementation of the proposed Project or other physical improvements at Middle Harbor. The No Project Alternative would result in a maximum throughput of approximately 2,600,000 TEUs per year, which is approximately 22 percent less throughput than the Project.

The same amount of dredged materials would be disposed in the harbor under the Project and Alternative 2. The amount of excavated material to be disposed within the harbor would be slightly less for Alternative 2 than for the Project. The amount of imported fill, however, would be considerably less for Alternative 2. Although the quantities to be disposed and the area filled would differ, the types of impacts would be similar.

*Water Quality***.** Modifications to backlands and transportation systems within the Project area are not water-dependent activities, although their use is related to operation of the marine terminal berths. Runoff from construction activities at these locations, however, could similarly affect water quality in the harbor with the exception of the No Project Alternative where no backland construction would occur. Compliance with existing regulations and Project permits would minimize impacts on water quality.

Construction activities in harbor waters (Project and Alternative 2) would have short-term effects on water quality but would remain in compliance with Federal and state water quality standards. The Project would have more in-water activity, due to the fill in East Basin, than Alternative 2. However, no contaminants would be discharged in concentrations that could be toxic to aquatic biota for the Project or Alternative 2. Alternatives 3 and 4 would not involve in-water activities.

Aquatic Biota. The Project would permanently remove 63.5 acres of marine habitat as a result of the Slip 1 and East Basin fills while creating 10.7 acres of marine habitat through excavation at Pier D and Pier F for a net loss of 54.6 acres. This would affect aquatic biota and EFH. Alternative 2 would permanently remove 31 acres of marine habitat while creating 6.3 acres of marine habitat through excavation at Pier D for a net loss of 24.7 acres. These impacts would be mitigated by use of existing Port mitigation credits. In-water construction activities would temporarily affect aquatic biota for the Project and Alternative 2 through turbidity, underwater noise, and habitat alteration. Impacts would be less than significant because the effects would occur in a small area, have a relatively short duration, would not permanently disrupt communities, and mobile species would temporarily avoid the work areas. The Landside Improvements Alternative and No Project Alternative would have no in-water construction or discharges and, therefore, not require Federal action. No threatened or endangered species or special aquatic sites would be adversely affected by the Project or alternatives.

The potential for introduction of invasive species via ballast water and vessel hulls would not be increased by the Project or alternatives. The number of vessel calls for the Project, Alternative 2, and Alternative 4 would be less than the NEPA Baseline, while the number of vessel calls under Alternative 3 would be the same as the NEPA Baseline. Vessel hulls are generally coated with antifouling paints and cleaned at intervals to reduce the frictional drag from growths of organisms on the hull (Global Security 2007), thereby reducing the potential for transport of exotic species. Due to these standard procedures and current ballast water regulations, the potential to introduce additional exotic species via ballast water would not be increased by the Project or alternatives.

Human Health and Welfare. The Project and alternatives would have no significant impacts on human health and welfare, including recreational and commercial fishing, municipal and private water supplies, water-related recreation, flooding, and aesthetics.

Waters of the U.S. The Project and Alternative 2 would result in a permanent loss of 54.7 acres and 24.7 acres of waters of the U.S., respectively, that would be mitigated through use of Port credits. The Project and Alternative 2 also would have temporary impacts within waters of the U.S. The extent and duration of these temporary impacts would be less for Alternative 2 than for the Project.

Terminal Function. As described in Section II.C, without expansion or significant improvements, the capacity of existing Port facilities is estimated to be approximately 12 million TEUs per year

and that level of throughput will be reached by 2015, based on predicted future containerized cargo throughput volume. In addition to the total TEUs, the number of vessel calls required to transport this throughput have also been projected. The results of these forecasts are shown in Table E-4.

Conclusions. Based on the Final EIS/EIR analyses, Alternative 3 (Landside Improvements Alternative) and Alternative 4 (No Project Alternative) would be the least environmentally damaging alternatives; however, neither of these alternatives would meet the overall Project purpose of increasing container terminal efficiency to accommodate a portion of the predicted future containerized cargo throughput volume and the modern cargo vessels that transport those goods to and from the Port. Compared to the NEPA Baseline (Table E-4), the terminal area would remain the same for Alternative 3 (Landside Improvements Alternative) and Alternative 4 (No Project Alternative); throughput would be the same as the NEPA Baseline for Alternative 3 and 11 percent less for Alternative 4; and vessel calls would be the same as the NEPA Baseline for Alternative 3 and 25 percent less for Alternative 4. Under Alternatives 3 and 4, none of the existing berths would be upgraded or expanded. Consequently, the terminals would be insufficient for the activities and modern equipment necessary to efficiently and safely handle the anticipated containerized cargo volumes.

Compared to the NEPA Baseline, Alternative 2 (315-Acre Alternative) would be seven percent larger, throughput would be one percent less, and vessel calls would be 12.5 percent less. Slip 3 would be widened, Berths E24-E26 would be upgraded and expanded, and Berths F6-F10 would be upgraded, resulting in temporary disturbances to marine habitat. The increase in terminal area would result from landfill construction that would result in a net loss of 24.7 acres of marine habitat that would be mitigated below significance through the purchase of credits at the Bolsa Chica Mitigation Bank. Alternative 2 would be similar to the proposed Project except that the 34.3-acre East Basin area would not be filled and the Berth E23 wharf would not be constructed. The elimination of the East Basin fill and Berth E23 wharf would decrease container movement efficiency compared to the Project. Alternative 2 would consolidate common operations and wharves of the existing two terminals on Piers E and F into one terminal, as would occur under the proposed Project.

However, under this design the available area behind the Pier F berths and along the railyard would be substantially limited in width and would not support efficient access by trucks transporting containerized cargo. The storage area in that part of the terminal would be limited to approximately 36 acres. Because of the limited storage in that area, a substantial portion of the cargo being loaded to and discharged from the ships at Berths F6-F10 would need to be transferred from/to the main storage yard in the northern portion of the terminal. This would require longer intra-terminal trips by the yard hostlers, more equipment in the yard, and double handling of boxes moving to/from the Pier F storage area. All of these logistical constraints would complicate, and add cost to, terminal operations.

Additionally, the ships projected to call at the reduced-fill terminal are, on average, smaller than the vessels projected for the preferred project. Estimates from the Port's 2005 Vessel Forecast (Mercator, 2005) indicate that average daily cost per TEU of operating the projected vessels for the reduced-fill alternative would be approximately 8% higher than the costs for the Preferred Project.

Finally, the long-term planning process undertaken in the POLB Master Plan emphasizes future terminal expansions take place in inner harbor areas (such as Middle Harbor) as opposed to outer harbor areas, which are considered more environmentally sensitive. Efforts to make up throughput shortfalls (that would be greater under the 315-Acre Alternative) would still need to focus on inner harbor redevelopment, which is consistent with the POLB Master Plan and Preferred Alternative.

Overall, the 315-Acre Alternative would be less environmentally damaging than the Project in terms of the immediate fill area and partially fulfill the overall project purpose; however, the logistical constraints inherent in the project layout would result in a substantial decrease in throughput compared with the NEPA baseline. Furthermore, the need to address throughput shortfalls would

be greater under the 315-Acre Alternative, which could ultimately result in greater environmental impacts should terminal expansion be directed away from the inner harbor. For these reasons, the 315-Acre Alternative is not considered to be the least damaging practicable alternative.

The Project would rehabilitate or replace deteriorated and obsolete terminal facilities; provide deeper water (-55 feet MLLW) at berths and in basins and channels; create new land; modernize marine terminal facilities; provide rail infrastructure improvements (e.g., mainline track realignment at Ocean Boulevard/Harbor Scenic Drive, Pier F Avenue storage yard and tracks, Pier F tail track, and expansion of the existing Pier F intermodal railyard); construct a 66kV substation to support Middle Harbor container terminal operations, including shore-to-ship power; and implement environmental controls, including the Port's Green Port Policy and CAAP, to accommodate a portion of the predicted future increases in containerized cargo volume and the modern, larger cargo vessels that are expected to transport these goods to and from the Port. Project throughput volumes (3,320,000 TEUs) would adequately accommodate forecasted container throughput growth at the Port. Therefore, based on preliminary analysis, the Project is the least environmentally damaging practicable alternative that meets the overall project purpose.

NA Yes / __ No (2) Based on Section II.C, if the project is in a special aquatic site and is not water-dependent, has the applicant clearly demonstrated that there are no practicable alternative sites available?

Table E-4. Comparison of Alternatives

	NEPA Baseline	345-Acre Alternative (Project)	315-Acre Alternative	Landside Improvements Alternative	No Project Alternative
Total terminal area (acres)	294	345	315	294	294
Vessel calls	416	364	364	416	312
Annual throughput (TEU)	2,910,000	3,320,000	2,870,000	2,910,000	2,600,000
Dredging (cy)	0	680,000	680,000	0	0
Excavation (cy)	0	1,290,000	710,000	0	0
New wharf (feet)	0	1,900	550	0	0

Note: Numbers represent total in 2025.

B. Special Restrictions

Will the discharge:

__ Yes / X No (1) Violate state water quality standards?

__ Yes / X No (2) Violate toxic effluent standards (under Section 307 of the Act)?

__ Yes / X No (3) Jeopardize endangered or threatened species or their critical habitat?

__ Yes / X No (4) Violate standards set by the Department of Commerce to protect marine sanctuaries?

__X__ Yes ____ No (5) Evaluation of the information in Sections II.D and II.E above indicates that the proposed discharge material meets testing exclusions criteria for the following reason(s):

( ) Based on the above information, the material is not a carrier of contaminants.

( ) The levels of contamination are substantially similar at the extraction and disposal sites and the discharge is not likely to result in degradation of the disposal site and pollutants will not be transported to less contaminated areas.

(X) Acceptable constraints are available and will be implemented to reduce contamination to acceptable levels within the disposal site and prevent contaminants from being transported beyond the boundaries of the disposal site.

C. Other Restrictions

Will the discharge contribute to significant "waters of the U.S." through adverse impacts to:

____ Yes __X__ No (1) Human health or welfare, through pollution of municipal water supplies, fish, shellfish, wildlife and special aquatic sites?

____ Yes __X__ No (2) Life states of aquatic life and other wildlife?

____ Yes __X__ No (3) Diversity, productivity and stability of the aquatic ecosystem, such as the loss of fish or wildlife habitat, or loss of the capacity of wetland to assimilate nutrients, purify water or reduce wave energy?

____ Yes __X__ No (4) Recreational, aesthetic and economic values?

D. Actions to Minimize Potential Adverse Impacts (Mitigation)

__X__ Yes ____ No Will all appropriate and practicable steps (40 CFR 23.70-77) be taken to minimize the potential adverse impacts of the discharge on the aquatic ecosystem?

Discussion: Actions taken to minimize potential impacts are described in Section III. The permanent loss of aquatic habitat (54.6 acres) due to fill placement for the Project would be mitigated to less than significant through use of existing mitigation credits in the Bolsa Chica Bank. Alternative 2 (315-Acre Alternative) would reduce the amount of fill to 24.7 acres and the number of credits needed for mitigation. The temporary impacts of dredging, excavation, and berth construction/reconstruction would be minimized by limiting the area of disturbance to that needed for these activities. If the Project were approved, fill placement in Slip 1 and East Basin would be confined with a rock dike to limit sediment movement. Any contaminated sediments dredged or imported for fill would be placed in an approved CDF. Temporary construction impacts on water quality and aquatic biota would be minimized by compliance with conditions of the Project 401 Water Quality Certification and Section 404 permit. Plans and specifications for fill placement in Slip 1 and East Basin would include measures to prevent turbidity from leaving the site and monitoring to verify the Project complies with water quality standards. Runoff of pollutants during backland construction activities would be minimized through use of construction and industrial SWPPPs and standard Port BMPs listed in Final EIS/EIR Section 3.3.2.3 (e.g., use of drip pans, refueling in contained areas, regular equipment inspection with immediate repair of leaks, and covering drip pans during rainfall to prevent washout).

Based on the above information, the USACE has determined that the Project would avoid and minimize impacts to waters of the U.S. to the maximum extent practicable while meeting the overall Project purpose of increasing container terminal efficiency to accommodate a portion of the predicted future containerized cargo throughput volume and the modern cargo vessels that transport those goods to and from the Port. Therefore, the Project represents the least environmentally

damaging practicable alternative.

In proffering a USACE permit for the LAHD's currently proposed project, the USACE expects to include the following special conditions to further minimize the potential for adverse impacts to the aquatic ecosystem:

1. The permitted activity shall not interfere with the right of the public to free navigation on all navigable waters of the United States as defined by 33 C.F.R. Part 329.

2. This permit does not authorize the placement of creosote-treated pilings in navigable waters of the U.S. Only concrete or steel piles shall be used.

3. This permit does not authorize the disposal of material deemed inappropriate for disposal in a confined disposal facility (CDF) or designated as hazardous waste by either EPA or the California Dept of Toxic Substances Control in any portion of the project.

4. A pre-construction survey of the project area for *Caulerpa taxifolia* (Caulerpa) shall be conducted in accordance with the Caulerpa Control Protocol (see http://swr.nmfs.noaa.gov/hcd/caulerpa/ccp.pdf) not earlier than 90 calendar days prior to planned construction and not later than 30 calendar days prior to construction. The results of the survey shall be furnished to the Corps, National Marine Fisheries Service (NMFS), and the California Department of Fish and Game (CDFG) at least 15 calendar days prior to initiation of work in waters of the U.S. In the event that Caulerpa is detected within any portion of the project area, the permittee shall not commence work until such time as the infestation has been isolated, treated, and the risk of spread is eliminated as confirmed in writing by the Corps, in consultation with NMFS and CDFG.

5. The permittee shall discharge only clean construction materials suitable for use in the oceanic environment, with the exception of any contaminated sediment specifically authorized by the Corps for CDF disposal at Middle Harbor. The permittee shall ensure that no debris, soil, silt, sand, sawdust, rubbish, cement or concrete washings thereof, oil or petroleum products, from construction shall be allowed to enter into or placed where it may be washed by rainfall or runoff into waters of the U.S. To ensure compliance with this Special Condition, standard Best Management Practices shall be implemented and, as appropriate, maintained and monitored to ensure their efficacy throughout project construction. Upon completion of the activities authorized herein, any and all excess material or debris shall be completely removed from the work area and disposed of in an appropriate upland site.

6. The permittee shall notify the Corps of the date of commencement of operations not less than 15 calendar days prior to commencing work in waters, and shall notify the Corps of the date of completion of operations at least 5 calendar days prior to such completion.

7. The permittee shall notify the Commander, Eleventh Coast Guard District, and the Coast Guard Marine Safety Office / Group LA-LB, not less than 15 calendar days prior to commencing work and as project information changes. The notification, either by letter, fax, or e-mail, shall include as a minimum the following information:

a. Project description including the type of operation (i.e., dredging, diving, wharf construction, etc).

b. Location of operation, including Latitude / Longitude coordinates (NAD 83).

c. Work start and completion dates and the expected duration of operations.

d. Vessels involved in the operation (name, size, and type).

e. VHF-FM radio frequencies monitored by vessels on scene.

f. Point of contact and 24-hour phone number.

g. Potential hazards to navigation.

h. Chart number for the area of operation.

Addresses:

Commander, 11th Coast Guard District (dpw)

TEL: (510) 437-2980

E-mail: d11LNM@uscg.mil

Website: http://www.uscg.mil/dp/lnmrequest.asp

U.S. Coast Guard, Sector LA-LB (COTP)

TEL: (310) 521-3860

E-mail: john.p.hennigan@uscg.mil

8. The permittee and its contractor(s) shall not remove, relocate, obstruct, willfully damage, make fast to, or interfere with any aids to navigation defined at 33 C.F.R. chapter I, subchapter C, part 66. The permittee shall ensure its contractor notifies the Eleventh Coast Guard District in writing, with a copy to the Corps, not less than 30 calendar days in advance of operating any equipment adjacent to any aids to navigation that requires relocation or removal. Should any federal aids to navigation be affected by this project, the permittee shall submit a request, in writing, to the Corps as well as the U.S. Coast Guard, Aids to Navigation office. The permittee and its contractor are prohibited from relocating or removing any aids to navigation until authorized to do so by the Corps and the U.S. Coast Guard.

9. Should the permittee determine the project requires the placement and use of private aids to navigation in navigable waters of the U.S., the permittee shall submit a request in writing to the Corps as well as the U.S. Coast Guard, Aids to Navigation office. The permittee is prohibited from establishing private aids to navigation in navigable waters of the U.S. until authorized to do so by the Corps and the U.S. Coast Guard.

10. Upon notification to the U.S. Coast Guard as specified in Special Condition 7, the permittee shall forward a copy of the notification to the U.S. Coast Guard Captain of the Port (COTP). The COTP may modify the deployment of marine construction equipment or mooring systems to safeguard navigation during project construction. The permittee shall direct questions concerning lighting, equipment placement, and mooring to the appropriate COTP.

11. Within 30 calendar days of completion of the activities authorized by this permit, the permittee shall conduct a post-project survey indicating changes to structures and other features in navigable waters of the U.S. The permittee shall forward a copy of the survey to the Corps and to the National Oceanic and Atmospheric Service for chart updating: Gerald E. Wheaton, NOAA, Regional Manager, West Coast and Pacific Ocean, DOD Center Monterey Bay, Room 5082, Seaside, CA 93955-6711.

12. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters of the U.S., the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

13.For this permit, the term dredging operations shall mean: navigation of the dredging vessel at the dredging site, excavation of dredged material within the project boundaries or other Outer Harbor borrow site by the Port of Long Beach, and placement of dredged material into a hopper dredge or disposal barge or scow.

14.This permit does not authorize discharge of fill materials beyond the limits of the designated fill areas within Slip 1 and the East Basin.

15. Dredging authorized in this permit shall be limited to the areas shown in Figure 3 (attached), the Western Anchorage Temporary Sediment Storage Site and a Corps-approved borrow site located within the Port of Long Beach Outer Harbor. The Permittee is authorized to dredge no more than 680,000 cubic yards from Slip 3 (this does not include additional material excavated from Berths D29-D31 and Berths E24-E26 as required to widen Slip 3).

16. The maximum dredging/design depth shall be -55 MLLW along the combined Pier E and F wharf, with a maximum allowable over-dredge depth of 2 feet below the project/design depth.

17. At least 15 calendar days before initiation of any dredging or disposal operations authorized by this permit, the permittee shall send a dredging and disposal operations plan to the Corps and USEPA, with the following information:

a. A list of the names, addresses, and telephone numbers of the permittee's project manager, the contractor's project manager, the dredging operations inspector, the disposal operations inspector and the captain of each tug boat, hopper dredge, or other form of vehicle used to transport dredged material to the designated disposal site.

b. A list of all vessels, major dredging equipment, and electronic positioning systems or navigation equipment that will be used for dredging and disposal operations, including the capacity, load level, and acceptable operating sea conditions for each hopper dredge or disposal barge or scow to assure compliance with special conditions on dredging and disposal operations.

c. A summary of the results of a detailed analysis of all material to be dredged pursuant to sampling and analysis plan (SAP) that has been approved within three years of the dredging or disposal operation

d. A detailed description of the dredging and disposal operations authorized by this permit. Description of the dredging and disposal operations should include, at a minimum, the dredging and disposal procedures for the Slip 3 dredging for each project phase/stage and a schedule showing when each dredging project is planned to begin and end.

e. A pre-dredging bathymetric condition survey (presented as a large format plan view drawing), taken within 30 days before the dredging begins, accurate to 0.5-foot with the exact location of all soundings clearly defined on the survey chart. The pre-dredge survey chart shall be prepared showing the following information:

- The entire dredging area, the toe and top of all side-slopes, and typical cross sections of the dredging areas. To ensure that the entire area is surveyed, the pre-dredge condition survey shall cover an area at least 50 feet outside the top of the side-slope or the boundary of the dredging area, unless obstructions are encountered.
- The dredging design depth, over-dredge depth and the side-slope ratio.
- The total quantity of material to be removed from the dredging areas and the side-slope areas.
- Areas shallower than the dredging design depth shall be shaded green, areas between the dredging design depth and over-dredge depth shall be shaded yellow, and areas below over-dredge depth that will not be dredged shall be shaded blue. If these areas are not clearly shown, the Corps may request

additional information.

- The pre-dredging survey chart shall be signed by the permittee to certify that the data are accurate and that the survey was completed 30 days before the proposed dredging start date.

f. A debris management plan to prevent disposal of large debris at all disposal locations. The debris management plan shall include: sources and expected types of debris, debris separation and retrieval methods, and debris disposal methods.

18. The permittee shall not commence any dredging or disposal operations unless and until the permittee receives a written NTP from the Corps.

19. The permittee shall ensure that the captain of any hopper dredge, tug, or other vessel used in the dredging and disposal operations, is a licensed operator under U.S. Coast Guard regulations and follows the Inland and Ocean Rules of Navigation or the USCG Vessel Traffic Control Service. All such vessels, hopper dredges, or disposal barges or scows, shall have the proper day shapes, operating marine band radio, and other appropriate navigational aids.

20. The permittee shall maintain a copy of this permit on all vessels used to dredge, transport, and dispose of dredged material authorized under this permit.

21. The permittee's contractor(s) and the captain of any dredge covered by this permit shall monitor VHF-FM channels 13 and 16 while conducting dredging operations.

22. The permittee shall use an electronic positioning system to navigate at the dredging site. The electronic positioning system shall have a minimum accuracy and precision of +/- 10 feet (3 meters). If the electronic positioning system fails or navigation problems are detected, all dredging operations shall cease until the failure or navigation problems are corrected. Any navigation problems and corrective measures shall be described in the post-dredging completion report per Special Condition 29.

23. Upon request, the permittee and its contractor(s) shall allow inspectors from the Corps, USEPA, LARWQCB, and/or the U.S. Coast Guard to inspect all phases of the dredging and disposal operations.

24. Upon request, the permittee and its contractor(s) retained to perform work authorized by the permit or to monitor compliance with this permit shall make available to inspectors from the Corps, USEPA, LARWQCB, and/or the U.S. Coast Guard the following: dredging and disposal operations inspectors' logs, the vessel track plots and all disposal vessel logs or records, any analyses of the characteristics of dredged material, or any other documents related to dredging and disposal operations.

25. For this permit, the term disposal operations shall mean: (1) the transport of dredged material from the dredging site to the Slip 1 or East Basin fill sites by the Port of Long Beach; (2) the transport of material from other accepted sources by the Port of Long Beach to the Slip 1 or East Basin fill sites; (3) the transport of the hopper dredge or disposal barge or scow back to the dredging site by the Port of Long Beach; and (4) the disposal of fill material from an approved third-party source.

26. The permittee shall ensure dredged material is not leaked or spilled from the disposal vessels during in-harbor transit. No disposal vessel trips shall be initiated when the National Weather Service has issued a gale warning for local waters during the time period necessary to complete disposal operations.

27. During transit from the dredging site to the disposal site, the level that a hopper dredge can be filled shall not exceed the load line (Plimsoll line) to prevent any dredged material or water from spilling over the sides. No hopper dredge shall be filled above this predetermined level during

transit. Before each hopper dredge is transported to the disposal site, the dredging site inspector shall certify that it is filled correctly.

28. When using a disposal barge or scow, no water shall be allowed to flow over the sides. The level that a disposal barge or scow can be filled shall not exceed the load line (Plimsoll line) to prevent any dredged material or water from spilling over the sides at the dredging site or during transit from the dredging site to the disposal site. No disposal barge or scow shall be filled above this predetermined level. Before each disposal barge or scow is transported to the disposal site, the dredging site inspector shall certify that it is filled correctly.

29. The permittee shall submit a post-dredging completion report to the Corps within 30 calendar days after completion of each phase/stage dredging project. The report shall include all information collected by the permittee, the dredging operations inspector, and the disposal operations inspector or the disposal vessel captain as required by the special conditions of this permit. The report shall indicate whether all general and special permit conditions were met. Any violations of the permit shall be explained in detail. The report shall further include the following information:

a. Permit and project number.

b. Start date and completion date of dredging and disposal operations.

c. Total cubic yards disposed.

d. Mode of dredging.

e. Mode of transportation.

f. Form of dredged material.

g. A certified report from the dredging site inspector indicating all general and special permit conditions were met. Any violations of the permit shall be explained in detail.

h. A detailed post-dredging hydrographic survey of the dredging area. The survey shall show areas above the dredging design depth shaded green, areas between the dredging design depth and over-dredge depth shaded yellow, areas below over-dredged depth that were not dredged or areas that were deeper than the over-dredge depth before the project began as indicated on the pre-dredging survey shaded blue, and areas dredged below the over-dredge depth or outside the project boundaries shaded red. The methods used to prepare the post-dredging survey shall be the same methods used in the pre-dredging condition survey. The survey shall be signed by the permittee certifying that the data are accurate.

i. The post-dredging report shall be signed by a duly authorized representative of the permittee. The permittee's representative shall make the following certification:

> *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

30. All vessels, vehicles, equipment, and material used in construction-related activities in or on waters of the U.S., navigable waters of the U.S., or ocean waters, or used to complete construction in or over waters of the U.S., navigable waters of the U.S., or ocean waters, shall employ or otherwise be operated or used in compliance with all mitigation measures identified in the project's Mitigation Monitoring and Reporting Plan consistent with the project's certified

Environmental Impact Report.

31. The permittee shall ensure the contractor(s) use sound abatement techniques to reduce noise and vibrations from pile-driving activities. Steel piles and steel sheet pile shall be driven using a vibratory hammer. Concrete pile shall be driven to the maximum extent possible using a vibratory hammer, followed by an impact hammer to complete setting of the concrete piles. At the initiation of each pile-driving event and after breaks of more than 15 minutes, the pile driving shall also employ a "soft-start" in which the hammer is operated at less than full capacity (i.e., approximately 40 to 60 percent energy levels) with no less than a 1-minute interval between each strike for a 5-minute period. In addition, a qualified biologist hired by the permittee shall be required to monitor the area in the vicinity of pile-driving activities for any fish kills during pile driving. If there are any reported fish kills, pile driving shall be halted and the USACE and NMFS shall be notified. The biological monitor shall also note (surface scan only) whether marine mammals are present within 100 meters of the pile driving and, if any are observed, temporarily halt pile driving until the observed mammals move beyond this distance.

32. If a violation of any permit condition occurs, the permittee shall report the violation to the Corps within 24 hours. If the permittee retains any contractors to perform any activity authorized by this permit, the permittee shall instruct all such contractors that notice of any violations must be reported to the permittee immediately.

33. Prior to any discharges of fill in waters of the U.S., the permittee shall provide proof (through an updated credit ledger or similar means) that 40.0 credits have been debited from the Bolsa Chica Mitigation Bank to compensate for the loss of waters associated with the Project.

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