2

PROJECT DESCRIPTION

2.1 Introduction and Project Overview

This section describes the Proposed Pacific Los Angeles Marine Terminal Crude Oil Marine Terminal, Tank Farm Facilities, and Pipelines Project (proposed Project) and the alternatives considered in this Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR). The chapter provides an overview of the project, existing conditions at the site of the proposed Project, the purpose and need for the proposed Project, detailed project elements, alternatives considered, National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Baselines, and existing statutes, plans, policies, and other regulatory requirements that are applicable to the proposed Project and alternatives.

This section provides a brief summary of the key physical elements and operational parameters of the proposed Project.

2.1.1 Proposed Project Summary

The proposed Project would include construction and operation of a new marine terminal at Berth 408 on Pier 400 (Marine Terminal), new tank farm facilities with a total of 4.0 million barrels (bbl) of capacity, and pipelines connecting the Marine Terminal and the tank farms to local refineries (Figure 2-1). The terminal would be operated by Pacific Los Angeles Marine Terminal, LLC (PLAMT) under a 30-year lease from the Los Angeles Harbor Department (LAHD). PLAMT is a wholly-owned subsidiary of Plains All American Pipeline, L.P. (Plains). Should the Board of Harbor Commissioner elect to approve the project, mitigation measures contained in this Draft SEIS/SEIR will become part of the lease. Enforcement of these lease measures shall be through reporting, conformance actions, should deadlines be missed, and lease revocation where noncompliance cannot be remediated.

The proposed Project would not require any dredging, as Berth 408 already has sufficient water depth (-81 ft mean lower low water [MLLW]) to accommodate Very Large Crude Carrier (VLCC) vessels (up to 325,000 deadweight tons [DWT]), which would be the largest vessels expected to call at Berth 408, followed in order of decreasing size by Suezmax, Aframax, and Panamax-type vessels (see Table 1-1). The proposed Project would primarily receive crude oil and partially refined crude oil. The sole exception is that the proposed Project would also receive occasional deliveries of marine gas oil (MGO), a fuel with 0.05 percent sulfur content that is available in the local market, in order to provide low-sulfur fuel to tanker vessels unloading at the new berth.

The new Marine Terminal would be designed to receive crude oil from marine vessels and transfer the oil to two new tank farm facilities via a new 42-inch diameter, high-volume pipeline. The terminal would be operated so as to minimize the time each marine tanker remains at the berth and would do so with a combination of high capacity pumps, large diameter pipelines, and adequate storage capacity in the tank farms. One of the new tank farms would be located on Pier 400 (Tank Farm Site 1) and the other on Pier 300 at Seaside Avenue/Terminal Way (Tank Farm Site 2). The site of the Marine Terminal and both tank farm sites are owned by LAHD. The proposed Project's new tank farm facilities would be connected to the existing ExxonMobil Southwest Terminal on Terminal Island, the existing Ultramar/Valero Refinery on Anaheim Street near the Terminal Island Freeway, and to other Plains pipeline systems near Henry Ford Avenue and Alameda Street via new and existing 36-inch, 24-inch, and 16-inch pipelines. All new pipelines would be installed belowground, with the exception of the water crossings at the Pier 400 causeway bridge and at the Valero utility/pipe bridge that crosses the Dominguez Channel west of the Ultramar/Valero Refinery.

The proposed tenant, PLAMT, requires a minimum crude oil tank capacity of 4 million bbl to support an economically viable operation. The applicant represents that it has three customers that would utilize a total of 3.5 million bbl of capacity, and PLAMT would reserve 0.5 million bbl of capacity for operational and spot business use. Accordingly, the total tank capacity for the proposed Project would be 4.0 million bbl. Should the terminal operator require more than 4.0 million bbl of tank capacity at a later date, an additional environmental assessment would be required at that time.

2.1.2 Proposed Project Throughput Comparison

Table 2-1 identifies the existing CEQA Baseline (year 2004) throughput activities at the Pier 400 Marine Terminal and compares it to the throughput associated with the proposed Project in year 2010, 2015, 2025, and 2040, measuring throughput in barrels per day (bpd). NEPA Baseline throughput activities for years 2004, 2010, 2015, 2025, and 2040 are described in Section 2.5.2.1 (No Federal Action/No Project Alternative) since, as explained in Section 1.5.5.1 and Section 2.6, the NEPA Baseline is identical to the No Federal Action/No Project Alternative for this analysis. Throughput and vessel calls associated with the proposed Project are estimated based on demand projections from Baker & O'Brien (2007), customer commitments PLAMT has at this time, and the reasonably foreseeable capacity of the proposed Project to accommodate crude oil. NEPA Baseline conditions are described in Section 2.6.1 and Section 2.5.2.1. Appendix D1 provides details regarding the analyses supporting the throughput and vessel mix estimates used in this document.

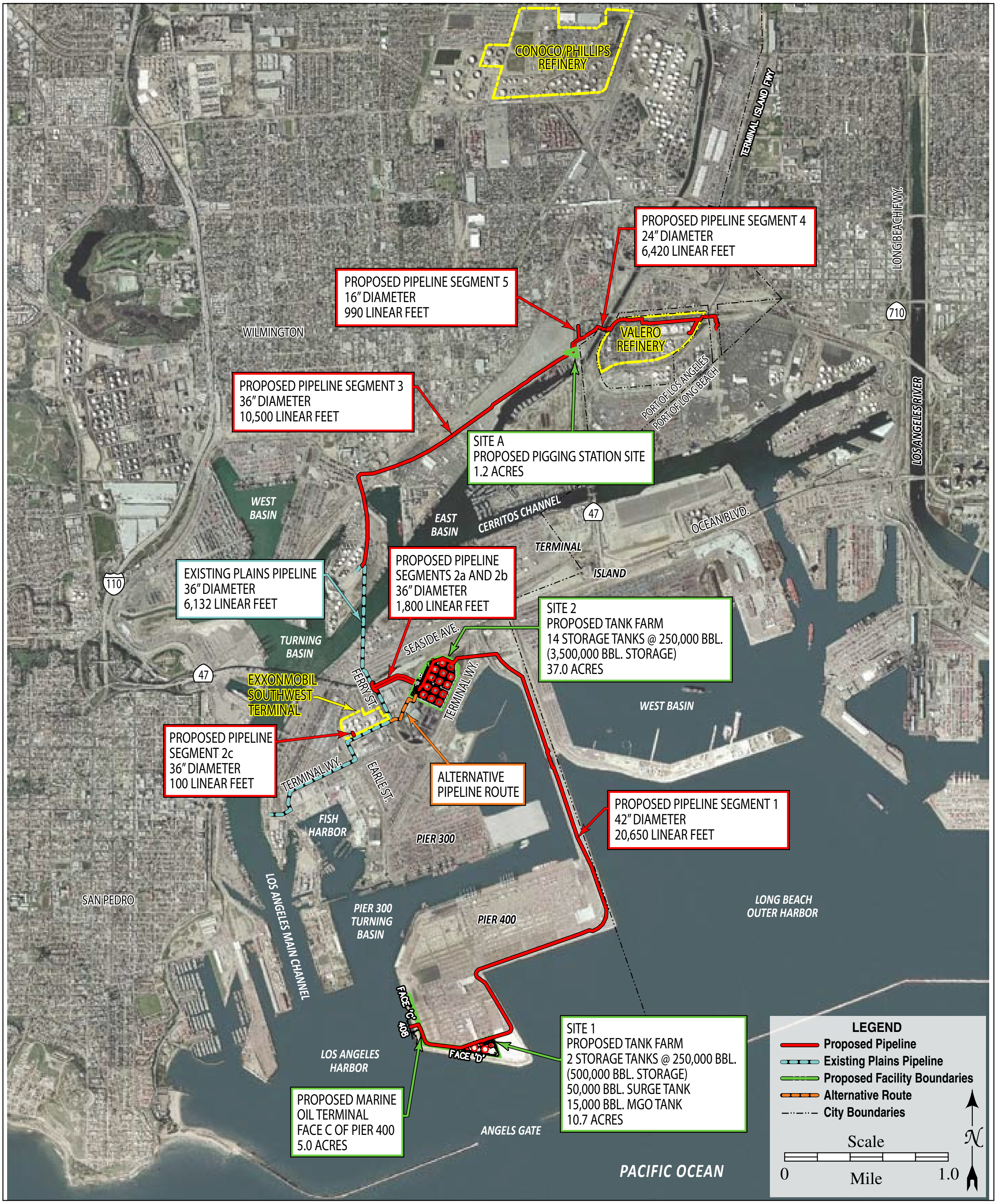

Figure 2-1. Proposed Project Site Locations (Aerial View)

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Table 2-1. Project Throughput Comparison[1]

Element	*CEQA Baseline (2004)*	*Proposed Project (2010)*	*Proposed Project (2015)*	*Proposed Project (2025)*	*Proposed Project (2040)*
Marine Terminal Acreage	0	5.0 acres (2.0 ha)	5.0 acres (2.0 ha)	5.0 acres (2.0 ha)	5.0 acres (2.0 ha)
Total Tank Farm Acreage	0	47.7 acres (19.3 ha)	47.7 acres (19.3 ha)	47.7 acres (19.3 ha)	47.7 acres (19.3 ha)
Tanker Calls	0	129 per year [2]	147 per year [2]	201 per year [2]	201 per year [2]
Average Crude Oil Throughput	0	350,000 bpd	500,000 bpd	677,000 bpd	677,000 bpd
Barge Calls	0	6	8	12	12
Crude Oil Storage Tanks	0	16	16	16	16
Crude Oil Tank Capacity	0	4.0 million bbl	4.0 million bbl	4.0 million bbl	4.0 million bbl
Employees	0	523 peak [3]	48 [4]	54 [4]	54 [4]

Notes:

bpd = barrels per day
bbl = barrels
ha = hectares

1. NEPA Baseline throughput activities for years 2004, 2010, 2015, 2025, and 2040 are described in Section 2.5.2.1 (No Federal Action/No Project Alternative) since, as explained in Section 1.5.5.1 and Section 2.6, the NEPA Baseline is identical to the No Federal Action/No Project Alternative for this analysis.
2. The number of tanker calls depends on crude oil supply sources and vessel availability; the estimate shown here is based upon projections of the world tanker fleet and terminal throughput from Baker & O'Brien (2007), and is the highest reasonably foreseeable number of tanker calls under the proposed Project. See Appendix D1 for detailed calculations used to derive the estimate. These highest reasonably foreseeable numbers are assumed in the impact analysis in this SEIS/SEIR in order to capture all potential impacts of the proposed Project. A higher proportion of large vessels carrying larger loads would mean fewer vessel calls per year. Note that an emissions cap would be imposed in the South Coast Air Quality Management District (SCAQMD) operating permit, as described in Section 3.2 Air Quality. The actual number of tanker calls per year would be limited to comply with the SCAQMD permit condition; however, this SEIS/SEIR does not incorporate this limitation (in order to capture all potential impacts of the proposed Project).
3. The peak number shown represents peak employment during the construction phase (taking into account that operations would start in 2010 while construction is ongoing); see Section 2.4.3.1 for details. This peak level would occur for only a brief time period, if at all, but is the highest reasonably foreseeable number.
4. The number of employees during operation of the proposed Project includes those employed or contracted by PLAMT as well as the estimated increase in tugboat and Port pilot crews due to increased vessel calls. Employment is higher in later years because of the higher number of vessel calls resulting in more tugboat and Port pilot crews, as well as the need for increased inspections and maintenance that start five to ten years after the start of operations.

2.1.3 Need for Additional Capacity

As described in Chapter 1 (Section 1.1.3), Californians require mobility to conduct their everyday lives and attend to their business needs (CEC 2007b). Even with full implementation of the State Alternative Fuels Plan (CEC and CARB 2007), petroleum based fuels are and will continue to be a necessary part of California's energy portfolio. In the 2007 Integrated Energy Policy Report (IEPR), the California Energy Commission (CEC) found that "conventional petroleum fuels will be the main source of transportation energy for the foreseeable future… California must address its petroleum infrastructure problems and act prudently to secure transportation fuels to meet the needs of our growing population" (CEC 2007b). CEC stated further that "This should be viewed as a strategy to allow time for the market and consumer behavior to adjust to alternative fuels and transportation choices. During this transition, California must be innovative and aggressive in finding more ways to make increased efficiency, greater renewable fuel use, and smart land use planning the most desirable consumer options" (CEC 2007b). Thus, the proposed Project would help meet California's stated needs for transportation energy facilities by providing critical infrastructure called for in the CEC's Integrated Energy Policy Reports since 2003. In the 2007 IEPR the CEC recommends that California continue with improving critical petroleum product import infrastructure, particularly for crude oil, as well as related storage and onshore transportation facilities (CEC 2007a; CEC 2007b; CEC 2007c). The proposed Project directly addresses part of this stated need.

As reported in Section 1.1.3, since consumer demand for transportation fuels exceeds the capacity of refineries to produce them, the demand for marine crude oil deliveries to southern California is essentially a function of the estimated rate of refinery distillation capacity increase (including refinery capacity creep as well as infrastructure improvement projects to increase refinery distillation capacity) and the estimated decline in California crude oil production. Baker & O'Brien (2007), consulting for PLAMT, have forecasted southern California's demand for marine deliveries of crude oil as a function of these two factors. Baker & O'Brien (2007) estimate that by 2040, the demand for marine crude oil deliveries in southern California will increase by 677,000 bpd compared to 2004. See Section 1.1.3 and Appendix D1 for additional information about the Baker & O'Brien projection.

2.2 Existing Conditions

2.2.1 Regional Context

The Port consists of 28 miles of waterfront, approximately 300 commercial berths, and 7,500 acres of land and water. The Port is administered under the California Tidelands Trust Act of 1911 by the LAHD. The LAHD is chartered to develop and operate the Port to benefit maritime uses, and it functions as a landlord by leasing Port properties to more than 300 tenants. The Port contains 27 major cargo terminals, including facilities to handle automobiles, containers, dry bulk products, liquid bulk products and cruise ships as well as extensive transportation infrastructure for cargo movement by truck and rail. The Port accommodates commercial fishing, canneries, shipyards, and boat repair yards; provides slips for 6,000 pleasure craft, sport fishing boats, and charter vessels; and supports community and educational facilities such as a public swimming beach, the Boy/Girl Scout Camp, the Cabrillo Marine Aquarium, and the Maritime Museum.

2.2.2 Project Setting

The proposed Project (marine terminal and tank farms) would be located on Pier 400 and Pier 300 in the Port. The Marine Terminal site and Tank Farm Sites 1 and 2 are in the Terminal Island/Seaward Extension Planning Area 9 of the Port (as identified in the Port Master Plan or PMP). Pier 400 is a man-made peninsula in the southeasterly portion of the Port, bordered on the east by the Port of Long Beach's Outer Harbor and on the south and west by the Port's Outer Harbor. The Pier 300 Container Terminal and the U.S. Coast Guard (USCG) Base and adjacent federal prison are located across the harbor waters to the north and west of Pier 400, respectively (Figure 2-2). The proposed Tank Farm Site 2 on

Figure 2-2. Existing Conditions at the Proposed Project Site

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Pier 300 is the area adjacent to the Seaside Avenue/Navy Way and Reeves Avenue/Navy Way intersections (Figure 2-1). Portions of the pipeline route, and the termini of the new pipelines at the Ultramar/Valero Refinery and connections into other Plains pipeline systems, would extend outside of Port-controlled property. Most of the portions outside the Port would be within property owned by the Ultramar/Valero refinery or within road or railway rights-of-way in the City of Los Angeles; a small portion would be within the City of Long Beach. PLAMT would acquire new entitlements or any amendments to existing entitlements, as needed, for pipelines that traverse off-Port areas.

2.2.3 Project Sites and Surrounding Uses

2.2.3.1 Marine Terminal Site

The proposed Marine Terminal portion of the proposed Project would be located on vacant land on the western side (Face C, Berth 408) and southern side (Face D) of Pier 400 in the Terminal Island/Seaward Extension Planning Area 9 of the Port (as identified in the PMP). The APM Container Terminal (Maersk-Sealand) is located to the north and east of the proposed Marine Terminal. Waters of the Los Angeles Outer Harbor are adjacent to both faces on the west and south sides.

2.2.3.2 Tank Farm Sites

Pier 400 Site (Tank Farm Site 1)

Tank Farm Site 1 would be located on the southern side (Face D) of Pier 400. Tank Farm Site 1 is 10.7 acres (4.2 ha.) and is currently vacant, unpaved, and ungraded. The site is owned by the LAHD and is adjacent to the APM Terminal to the north and west, a California Least Tern nesting preserve to the east, and the Los Angeles Harbor to the south and west.

Terminal Island Site (Tank Farm Site 2)

Tank Farm Site 2 would be located on approximately 37.0 acres (15.3 ha) south of Seaside Avenue and west of Terminal Way. In the late 1990s, the Los Angeles Export Terminal, Inc. (LAXT) was constructed on the site as a dry bulk terminal, including structures for the handling and export of petroleum coke. However, LAHD now has full jurisdiction over the site, and LAXT no longer has any entitlement to the site. Under a separate project, the LAHD is in the process of demolishing all above and below ground structures within the existing rail tracks loop; the existing rail tracks will continue to operate. The future use of the site is expected to be for liquid bulk storage (either for the proposed Project or alternative or for some future, as yet unknown, project).

2.2.3.3 Pipeline Routes and Pigging Station Site

The general locations of each of the pipeline routes are shown in Figure 2-1. Detailed route descriptions for each pipeline, including additional figures, are provided in Section 2.4.2.3. In general, the pipelines would traverse land use areas of the Port that have been used for industrial, port-related activity or military activity. A few exceptions would occur where small portions of the pipeline routes cross private property on the

Valero/Ultramar Wilmington Refinery site and a California Department of Transportation (CalTrans) right of way east of the refinery. Most of the pipelines would be located in existing rights-of-way such as roadway routes, and pipelines north of Mormon Island would primarily be directionally drilled at varying depths. The pipelines near Banning's Landing would be directionally drilled and would be approximately 80 feet underground at that location.

The proposed Project includes a new pig launching station ("pigs" are mechanical devices used to clean and inspect pipelines; a pig launching station is a point on a pipeline at which pigs can be inserted into and removed from the pipeline), called Site A, which encompasses about 1.2 acres and would be located directly west of Henry Ford Avenue, west of the Air Products facility. This site would be used as a transition point for connections to an existing 16-inch diameter pipeline owned by Plains that extends to the ConocoPhillips Carson Refinery (the connection to the existing Plains pipeline would be made via Proposed Pipeline Segment 5) and a new 24-inch diameter pipeline (Proposed Pipeline Segment 4) that extends to the Valero/Ultramar Wilmington Refinery and Valero Refineries, as well as connections to existing pipeline systems owned by Plains on the east side of the Terminal Island Freeway.

Site A could be unavailable at the time of proposed Project construction, as some of the site is included for potential development as an alternative in the Schuyler Heim Bridge Replacement and SR-47 Expressway Project (CalTrans 2007). Should Site A be unavailable, the new pigging station would be sited at an alternative location, called Site B. Site B would encompass approximately 0.61 acres and would be located directly east of Henry Ford Avenue, south of Anaheim Street, and west of the Air Products facility. If used instead of Site A, Site B would be used as a transition point for connections to the same set of new and existing pipelines as noted above for Site A. Section 2.4.2.3 provides more information about pipeline routes including how the routes would differ if Site B were used.

2.2.4 Historic Use of Project Sites

Pier 400, where the Marine Terminal and Tank Farm Site 1 would be located, was created in the early 1990s by placement of dredged material from the Deep Draft Navigation Improvements project (USACE and LAHD 1992). There is no historic use of the Marine Terminal or Tank Farm 1 sites – both have been vacant since the creation of Pier 400.

In the 1920s the City of Los Angeles constructed Allen Airfield on the proposed Tank Farm Site 2 and land to the southwest. From 1932 until the early 1990s the area was used by the U.S. Navy, first for beaching floatplanes for maintenance checks at Allen Airfield and later for general storage and support for the Naval Station. Later, the filming company Reel to Reel had an office there. In 1992, as part of the Pier 300 Container Terminal project, the Tank Farm Site 2 area was designated for use as a dry bulk facility. That facility was operated until recently. Under a separate project, the LAHD is now in the process of demolishing the dry-bulk handling facilities on the site.

In general, the pipelines would pass under areas of the Port that have been used for industrial port-related activity, military activity, or private industrial uses such as refineries. The portion of the route on Pier 400 would be located in a right of way designated, but not previously used, for pipelines. Most of the new pipelines would be located in existing rights-of-way, such as roadway and railway routes, whose uses have not changed since the area was developed.

2.3 Project Purpose

The overall purpose of the proposed Project is to help accommodate the projected increase in demand for foreign crude oil to be imported into southern California while mitigating the impacts of that activity on the local environment and the Los Angeles region through adoption of all feasible mitigation measures and by implementing the San Pedro Bay Ports Clean Air Action Plan (CAAP). This purpose requires completing the environmental documentation to assess potential impacts of the proposed improvements (the proposed Project) and feasible alternatives.

The U.S. Army Corps of Engineers (USACE) and the LAHD base the need for the proposed Project on the following four current conditions: (1) the need to accommodate increasing foreign crude oil imports to offset declining domestic production; (2) a trend toward larger vessels and larger cargo sizes; (3) a projected shortfall in crude oil vessel berthing capacity at the San Pedro Bay Ports; and (4) increased need for crude oil tank capacity for efficient offloading of vessels at berth. Each of these needs is discussed in detail in Chapter 1 (Section 1.1.3).

2.3.1 CEQA Project Objectives

To establish and maximize the Port's crude oil handling efficiency and capacity, the following key Project objectives must be accomplished:

- Construct a crude oil marine terminal capable of accommodating deep-draft VLCC tankers, i.e., tankers up to 325,000 DWT or 2,300,000-bbl capacity and construct associated infrastructure capacity that would efficiently accommodate a portion of the forecasted increases in demand for crude oil to be shipped to southern California by sea, while maximizing the use of deep-water facilities created for the purpose by the Deep-Draft Navigation Improvements Project and integrating into the Port's overall utilization of available shoreline. The project objective would be accomplished by:
    - Providing needed crude oil marine terminal accessory buildings and structures to support efficient crude oil unloading and handling requirements;
    - Providing unloading capabilities to promote direct transfer of crude oil from ship to pipeline; and
    - Providing access to land-based tanks and new and existing pipeline systems to transport crude oil to refineries for processing.

2.3.2 NEPA Purpose and Need

The discussion of future crude oil demand and the need for additional facilities to accommodate that demand presented in Section 1.1.3 form the basis for the NEPA purpose and need. As discussed, the proposed Project would meet a public need for infrastructure development for the importation of crude oil. Per NEPA, the purpose of the proposed Project is to construct a crude oil marine terminal on Pier 400 at Berth 408, and related transfer facilities, to receive, store, and convey part of the forecasted increases in the volume of crude oil that will be shipped to southern California by sea. The USACE project purpose and need includes the following objectives:

- Construct and operate a crude oil terminal that maximizes the use of available shoreline and the existing deep-draft waterways created for the purpose by the Deep-Draft Navigation Improvements Project;
- Construct sufficient berthing and infrastructure capacity to accommodate a portion of the foreseeable volumes of crude oil expected to enter southern California from foreign sources and to ensure the efficient offloading of VLCCs;
- Provide the terminal accessory buildings and structures to support the anticipated crude oil handling requirements.

Pursuant to the Clean Water Act (CWA) Section 404(b)(1) Guidelines, the basic purpose is importation of crude oil; and the overall purpose of the proposed Project is to construct a crude oil marine terminal on Pier 400 at Berth 408, and related transfer facilities, to receive, store, and convey part of the forecasted increases in the volume of crude oil that will be shipped to southern California by sea.

2.4 Proposed Project

2.4.1 Project Elements

The three principal elements of the proposed Project are the marine terminal, the tank farms, and the pipelines. The two principal activities that would take place are: (1) construction of the Project and (2) operation of the Project. Elements common to all of the construction activities would include: testing and inspection, scheduling, labor force management, equipment and materials, staging and storage areas, equipment transportation, utility and services requirements, and demolition of existing structures.

Project operations would consist of four primary activities: tanker vessel operations, marine terminal operations, tank farm operations, and pipeline operations. Other elements of the Project specific to the operations phase would include: start-up procedures; emergency response procedures; and a number of common features such as site access and security, system control and safety features, storm water management, waste handling, lighting, and testing and inspection.

The capital cost of the proposed Project is estimated to be $400 million for the landside terminal elements, pipelines, and storage facilities. The wharf, utilities, and walkway would be designed and constructed by the Port; the total capital cost of those elements is estimated to be $50 to $55 million.

The application for the proposed Project includes commitments to several features that will help to reduce and offset air pollution emissions. In addition, the project includes the acquisition of a permit from the SCAQMD for operation that would include emissions caps and a requirement to purchase Emissions Reduction Credits (ERCs), as explained below. However, for analysis purposes in this document, the number of vessel calls and the throughput considered in this document are not constrained by emissions caps nor does the air quality analysis incorporate either caps or ERCs.

The features summarized below are taken into consideration in the environmental analysis (note, however, that implementation of some features is included as mitigation measures in order to provide tracking and enforcement mechanisms for their implementation). A full discussion of emissions reduction mitigation measures can be found in Section 3.2, Air Quality.

Mandatory Vessel Speed Reduction. All vessels would be required to slow to 12 knots at a distance of 40 nautical miles (nm) from the Port in order to reduce main engine emissions. This requirement would implement CAAP Measure OGV1 and is included as an enforceable mitigation measure.

Fuel Replacement. PLAMT proposes a fuel replacement strategy that would require use of marine diesel oil (MDO), a fuel with a worldwide average sulfur content of approximately 0.5 percent, rather than heavy fuel oil (HFO) (see Section 1.1.4) in the auxiliary engines and boilers when inbound to the Port starting at a point 40 nm from the berth. Upon arrival at the berth, the vessel would be refueled with a locally available MGO (a fuel with 0.05 percent sulfur content that is available in the local market). The resulting blended fuel would be a distillate with an estimated average sulfur content of 0.2 percent. While at berth and during transit away from the Port (to the 40 nm point), the vessel would use the 0.2 percent sulfur distillate blend in auxiliary engines and boilers. Using MDO inbound and a blended marine gas oil (MGO)/MDO distillate outbound in the auxiliary engines and boilers would reduce emissions of nitrogen oxides (NO_x), sulfur oxides (SO_x), and particulate matter (PM) compared to residual fuel (i.e., HFO). This project design feature assumes that low-sulfur MGO fuels would continue to be readily available at the start of project operation. MGO would be delivered to the 15,000-bbl tank at Tank Farm Site 1 by a barge that would originate from other liquid bulk terminals at the Port or the Port of Long Beach. This requirement would implement CAAP Measure OGV3 and OGV4 and is included as an enforceable mitigation measure.

Shore-Side Electric Pumps. Crude oil tankers typically offload their cargo using on-board boilers to provide power to pump the cargo out of the vessel and into shoreside tanks – in this case, potentially as far as Tank Farm 2. Consistent with CAAP Measure OGV2, the proposed Project would include electrical shore-side pumps to move the cargo inland from Tank Farm Site 1, and the vessel's boilers would only be used to off-load the cargo to the shore-side tanks at Tank Farm Site 1. This practice would greatly reduce emissions from the combustion of MGO in vessel boilers by reducing boiler load and the amount of fuel combusted. This was considered a design element of the project.

Alternative Maritime Power (AMP) System. The CAAP focuses on reducing emissions from vessels docked at the Port by allowing vessels to "plug in" and utilize electricity generated by onshore sources rather than using onboard diesel-fueled generators. This practice, termed alternative marine power (AMP) at the Port, is described in Section 1.6.2.3. The Port would build the infrastructure (i.e., pile supported platform) necessary to support AMP as an element of the proposed Project. However, the implementation of AMP would be a mitigation measure. For more details of the AMP support infrastructure and construction and operations, see Section 2.4.2.1 and

Section 3.2 of this document. This requirement would implement CAAP Measure OGV2 and is included as an enforceable mitigation measure.

Subject to the requirements summarized in Section 3.2 (Mitigation Measure AQ-17), another technology for emissions reduction may eventually be used as an alternative to AMP. One such technology is the Advanced Cleanup Technologies, Inc. (ACTI) Advanced Maritime Emissions Control System (AMECS). To facilitate its eventual implementation should AMECS be determined to be usable at Berth 408, the proposed Project includes construction of the support infrastructure for AMECS (i.e., a pile-supported platform and approach). More details about the AMECS, its evaluation for inclusion in the proposed Project, and its potential for eventual use at Berth 408 are provided in Section 2.4.2.1 below. Installation of AMECS would require separate environmental analysis if added in the future.

Emission Reduction Credits. As condition of obtaining SCAQMD permits to construct and operate the proposed Project, PLAMT would be required to purchase emission offsets at a ratio of 1.2 credits to 1 pound of calculated emissions in order to offset certain vessel emissions as well as certain land-based equipment, such as off-loading arms, tanks, and vapor destruction units. Section 2.4.4.5 describes the nature of the requirement and credits in more detail.

2.4.2 Facility Design and Configuration

2.4.2.1 Marine Terminal

The Marine Terminal would be built on a 5-acre (2 ha) parcel located at Berth 408 on the southwest portion of Pier 400 (Figure 2-3). Table 2-2 summarizes the facilities that would or might be constructed for the Pier 400 Marine Terminal.

Berth 408's current water depth of 81 ft (24.7 m) below MLLW would remain unchanged. Berth structures would be designed and constructed by the LAHD Engineering Division to accommodate VLCC tankers up to a length of 1,100 ft (335 m) and a beam of 200 ft (61 m). The berth would be designed to offload crude oil at up to 125,000 barrels per hour (bph).

Governing Codes and Standards. The engineering and design for the marine terminal at Berth 408 would be based primarily on the "Marine Oil Terminal Engineering and Maintenance Standards," (MOTEMS) Chapter 31F, Title 24, Part 2 California Code of Regulations, promulgated by the California State Lands Commission (CSLC) (CSLC 2004). These regulations were adopted by the CSLC and are the most advanced of their kind. The Port of Los Angeles Code for Seismic Design, Upgrade and Repair of Container Wharves (5/18/2004) would supersede MOTEMS, in case of conflict, only if proven to be more severe or restrictive. This is to ensure a conservative design approach compatible with both codes.

In addition to MOTEMS and the Port's code, the new facility would be designed in accordance with all other appropriate recognized engineering, safety, and seismic hazard design standards, including those listed below. The most severe or restrictive design code in effect at the time would apply. Details of the facility design, including general specifications, standards, and dimensions, are included in Appendix E.

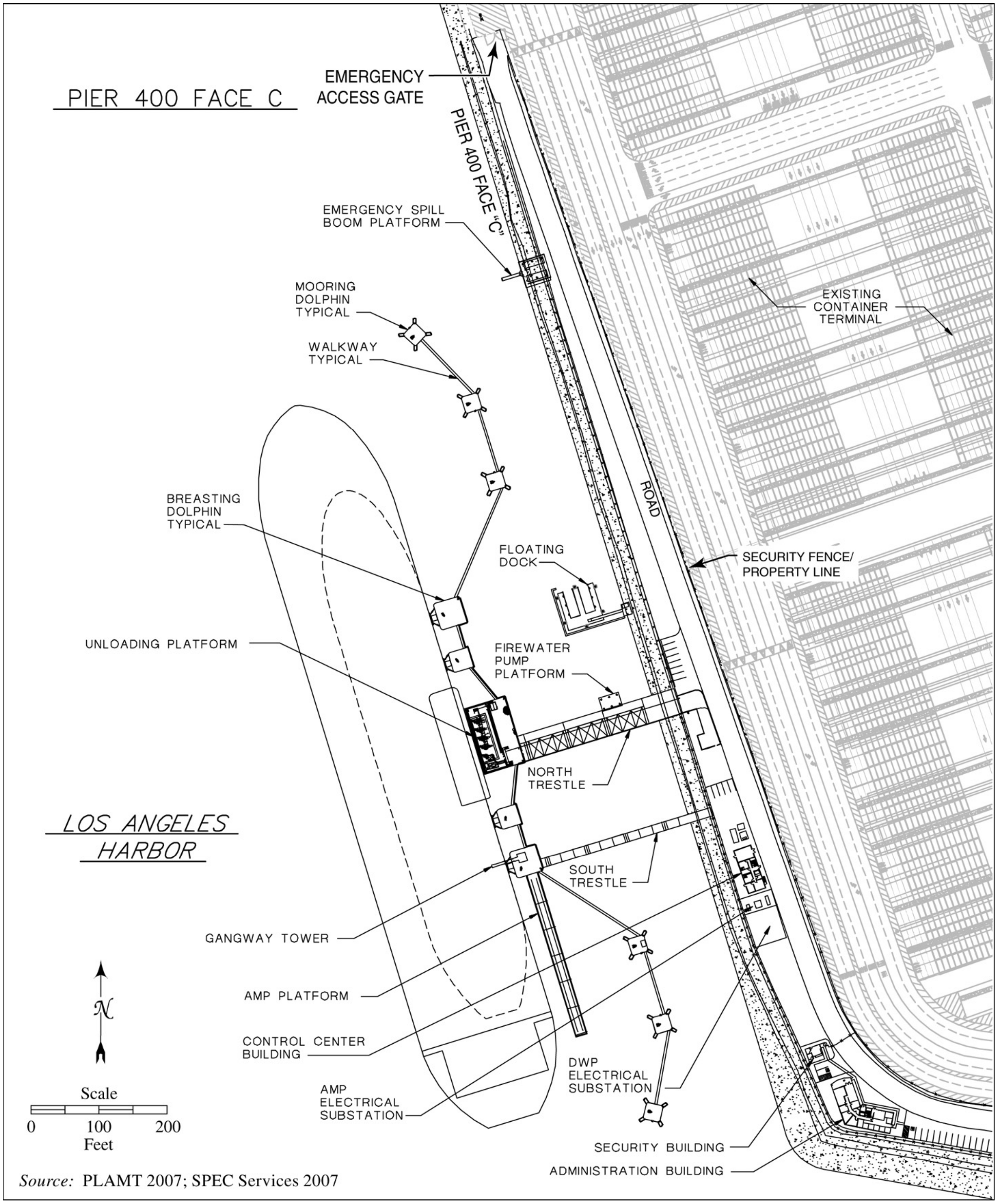


Figure 2-3. Face C of the Proposed Crude Oil Marine Terminal on Pier 400

Table 2-2. Operational Details and Physical Elements of the Berth 408 Marine Terminal

Component	*Description*
Parcel Size	5.0 acres (2.0 ha)
Berth Depth	81 ft (24.7 m) at MLLW
Berth Height	15 ft (4.6 m) above MLLW
Design Vessel Size	325,000 DWT, 1,100 ft (335 m) long, 200 ft (61 m) wide
Berth and Offshore Structures	Mooring dolphins with quick release hooks and powered capstans, breasting dolphins with unit fenders, firefighting system, unloading platform, north and south trestles, and walkways.
Offloading Arms	Four vessel offloading arms and one fuel loading and offloading arm.
Expected Offload Rate (Crude Oil)	50,000 to 125,000 barrels per hour (bph)
Expected Onload Rate (MGO)	3,500 bph
Pumping Equipment	Shore-side assist cargo offloading pumps and dock-side oil stripping pumps for vacating the offloading arms and dock piping.
Buildings	Terminal Security Office, Dock-Side Marine Terminal Control Building and Administration Building
Fire-fighting System	Firewater main, foam storage tanks and mixing skids, fire monitors, hose reels, portable extinguishers, fire detection system, electric-driven firewater pump, diesel firewater pump, and seawater intake system
Lighting	Terminal lighting designed to minimize glare from the property and navigation lighting to define limits of the dock
Process oil recovery system	Sumps with sump pumps, piping, and controls
Oil Spill Containment System	Spill Boom Launch Boat, Spill Boom Reels, Remote spill recovery boom storage and launch facilities, and Concrete-curbed platforms and equipment foundations
Storm Water System	Storm Water Collection and Transportation to the site 1 tank farm for treatment and discharge
Parking	Near Berth and Administration Building
Site Security	Perimeter security fence, 24-hour guard service, cameras with local or remote monitoring and control, perimeter security system
AMP Platform[1]	Pile-supported platform at the south end of the berth to accommodate the AMP electrical connection system.
AMECS Platform[1]	Pile-supported platform to support the AMECS crane, should the applicant eventually use this alternative emissions control system.

Note:

1. AMP and AMECS represent potential mitigation measures; the piles to support the required infrastructure are part of the proposed Project. See Section 2.4.1 for additional information about the nature of these measures as components of the proposed Project.

In-Water Structures. The berth would include an unloading platform; breasting dolphin platforms; a mooring and fendering system; and north and south trestles with roadways, pipeways, walkways, a floating utility boat dock, and a gangway tower; a platform to support the AMP facilities and another to support the AMECS facility. The berth would also include six mooring dolphins with quick release hooks and power capstans, an electric motor-driven derrick cargo crane, a davit crane (boat lowering crane), 4,000 ft (1,219 m) of spill boom storage, a foam-based remotely operated firefighting system, low-impact area lighting systems, cathodic protection corrosion prevention systems, and navigational lighting systems.

Steel and concrete piles would be required to support in-water components of the berth platform, including mooring dolphins, breasting dolphins, the unloading platform, walkways, and other components. At the current design stage it is not certain whether the mooring dolphins would require steel or pre-stressed concrete piles. If steel piles are used for the mooring dolphins, proposed Project components (including the AMP and AMECS platforms) would require approximately 150 piles in water (110 steel and 40 concrete). If concrete piles are used for the mooring dolphins, proposed Project components including the AMP and AMECS platforms would require approximately 258 piles in water (74 steel and 184 concrete). The concrete piles would be 24-inch diameter, and the steel piles would be a combination of 48-inch and 54-inch diameter. (The proposed Project would also require 34 concrete piles to be driven on land in the marine terminal area.)

The berth structures would be designed to support piping for crude oil, MGO vessel fuel, potable water, firewater, instrument air, fuel, and storm water, as well as the conduit, cable trays, wiring, instrumentation and controls, grounding systems, and other facilities associated with the various dock-mounted systems. The deck and gangways would be contained by a six-inch-high berm; storm water would drain to a sump below the deck.

The connection between the ship and the terminal for transferring crude oil and vessel fuel would be a hard-pipe flexible system commonly referred to as an offloading arm. The dock structure would include four crude oil offloading arms and one vessel fuel loading and offloading arm, with the associated control equipment and electric motors. The arms, which are approximately 80 feet high, would be designed to rotate more than 180 degrees to allow for the movement of the vessel from both cargo operations and wave and current effects. A fixed control station for the offloading arms would be constructed in a strategic location for good visibility during connection and disconnection, and wireless handheld control stations would also be provided. The unloading arms would be equipped with Quick Connect/Disconnect Couplers (QC/QDs) at the manifold.

Lighting would be designed to local City of Los Angeles, LAHD, and USCG requirements. The unloading platform would have a variety of lights, including an 80-ft (24.4-m) high tower to sufficiently light the offloading arms and lower deck level lights to illuminate the equipment and piping in specific areas where additional light is required, or where equipment would shadow the tower lighting. The fixtures selected for this area and throughout the Project areas would have refractors and corresponding photometric light curves designed with the goal of minimizing the spillage of any light from the property or to the surface of the water. The tower would have from four to eight 400-watt fixtures, based on needs determined by lighting calculations. If an AMECS or other similar emission control facility is eventually installed, appropriate lighting would be required; however, such lighting is not part of the proposed Project.

Landside Structures. Three buildings are proposed for construction at the Marine Terminal. These will all be certified in the Leadership in Energy and Environmental Design (LEED) standards established by the U.S. Green Building Council:

- *Terminal Control Building*: The Terminal Control building would be an approximately 6,000-square foot (sq ft) (557-square meter [sq m]), single or two-story building that would provide space for the terminal operator and company personnel associated with the operation of the Marine Terminal, the tank farm distribution system, and the terminal security system. The control building would also house the motor control centers for the offloading arms, restroom and locker facilities for the operators and visitors, and monitoring and control equipment for the offloading arms, stripping pumps, valves, fire detection and firefighting systems, and storm water management system.

- *Administration Building*: The Administration Building would be an approximately 15,000-sq ft (1,394-sq m), two-story or three-story building that would provide offices, meeting spaces, restroom facilities, and a lunchroom.
- *Security Building*: The Security Building would be single-story, and have a footprint of approximately 1,500 sq ft (140 sq m). The building would provide space for the terminal security personnel and site monitoring equipment.

Other landside elements of the Marine Terminal would include a fire-fighting system, pumping systems for oil and water, and the electrical system. The fire-fighting system would be designed to meet applicable fire codes. Two firewater pumps, one electric-powered and one diesel-powered, would be installed at the Marine Terminal to serve both the berth and Tank Farm Site 1. A seawater intake system would be provided at the berth as required by the Los Angeles Fire Department.

Two 125 gallon-per-minute (gpm) dockside stripping pumps for crude and two 50 gpm dockside stripping pumps for fuel, along with associated piping, would be provided to empty the offloading arms after each transfer. Two contact water pumps for drawing storm water from the sump under the deck would also be provided.

The proposed Marine Terminal would also include 34.5 kilovolt (kV) electrical transmission service, provided by Los Angeles Department of Water and Power (LADWP), electrical switch gear and motor control centers; power and control conduits and cables; terminal and building lighting systems; terminal grounding system; and miscellaneous associated electrical equipment. This equipment would be necessary to power the electric shore side pumps, provide general facility load, and to accommodate potential future electrical loads associated with the AMP system.

The structural elements of the Marine Terminal would be designed for a service life of 50 years, with no significant maintenance to structural elements due to deterioration during the first 25 years. Equipment such as unloading arms, pumps, and generators would be designed for a service life of at least 30 years, consistent with the term of the proposed lease. However, routine maintenance activities, cathodic protection systems, and a thorough inspection and repair program would be expected to extend the actual service life well beyond the design life.

Prior to the start of construction, the terminal operator would submit for Port review and approval a landscape plan for areas within the terminal and adjacent to the Tank Farm Sites where it is feasible and appropriate to install vegetation as an amenity, as well as a color scheme for the terminal and tank farm structures, with the design objective being to choose hues that would add visual interest to the terminal and tank farm and that are also compatible with the landscape plan. The landscape plan would conform to applicable City of Los Angeles guidelines, including features to minimize GHG production and water consumption.

Alternative Maritime Power (AMP). The Marine Terminal would be equipped with the AMP system, which is a system developed by the Port to reduce air emissions. The AMP system would allow vessels to "plug in" and utilize electricity generated by onshore sources rather than using onboard diesel-fueled generators to produce the electricity needed for vessel hoteling and auxiliary engine operations during vessel unloading. The use of AMP would constitute an air quality mitigation measure (see Section 3.2) rather than a feature of the proposed Project. However, the construction of the platform the platform on the berthing structure that would support AMP as well as conduits, utility connections, and general infrastructure needed for operation of an AMP system would be installed as part of the proposed Project during construction of the Marine Terminal.

The power substation and dockside cable handling gear would be constructed as soon as tankers become available that could utilize the AMP system. These elements are part of the AMP implementation and thus considered part of the AMP mitigation measure rather than part of the proposed Project. (Section 1.6.2 has additional information about AMP implementation at the Port.)

According to the CAAP Technical Report, AMP is best suited for vessels that make multiple calls per year, require a significant demand at berth, and will continue to call at the same berth for multiple years. Implementing AMP requires extensive infrastructure improvements onboard vessels that would use the system as well as on the terminal side for supplying the appropriate level of conditioned electrical power supply (LAHD and Port of Long Beach 2006). Most of the tankers that would call at Berth 408 would not make multiple calls per year and may not call at the berth for several years at a time. In addition, retrofitted tankers would use AMP to replace only auxiliary engine emissions (not boiler emissions) due to engineering constraints. For these reasons, AMP may not be the most cost-effective strategy for controlling air emissions from tankers at Berth 408. This conclusion was also reached in the CAAP Technical Report, which noted that AMP would not necessarily be the best control approach for tankers (LAHD and Port of Long Beach 2006).

Accordingly, PLAMT has committed to evaluating AMECS and considering its application to the proposed Project. In addition, the proposed Project includes the construction of a platform that could support an AMECS vessel emission control system. However, no other infrastructure for the AMECS is included as part of the proposed Project. Parts of the AMECS system have been tested as part of a pilot project at the Port of Long Beach that is focused on vessels carrying dry bulk, break bulk, and roll-on/roll-off cargo (Port of Long Beach 2006). However, at this time, the full system has not been tested on any vessel. In addition, the application of AMECS to crude oil tankers raises more technical challenges than those associated with container vessels and bulk vessels, which do not use boilers in the off-loading of their cargo. The boilers on board tankers that are used for cargo offloading are quite large, and the addition of boiler combustion stack gases into the AMECS collection and treatment system will increase the volume of gas handled by 4-8 times, resulting in significant scale-up challenges both in gas handling (e.g., ducts and fans) and gas treatment (e.g., scrubbers, selective catalytic reduction systems, and heat exchangers).

If AMECS is demonstrated to be feasible for tankers, PLAMT may request approval from the Port to use the AMECS technology as an alternative to AMP for some or all vessel calls. In addition, if AMECS is demonstrated to be feasible for tankers, the Port could require PLAMT to construct and implement the system under the provisions of air quality mitigation measure MM AQ-20 (Periodic Review of New Technology and Regulations); see Section 3.2 for details. In either scenario (either PLAMT's application to use AMECS or the Port's direction to PLAMT to use AMECS under the provisions of MM AQ-20), the Port would need to approve the use of AMECS as an alternative to AMP (see Section 3.2, and especially the discussion of MM AQ-17, Equivalent Measures). In addition, the construction and operation of AMECS, if it occurs in the future, would require a separate environmental assessment satisfying the requirements of CEQA and, if a USACE permit would be required, the requirements of NEPA.

Inspection and Maintenance Considerations. The structural elements of the Marine Terminal would be designed such that all components would be accessible, to the extent practical, for normal inspection and maintenance and for inspection and repair following a significant loading event such as a vessel impact or earthquake. Structural elements that would be avoided include buried tie-back anchors and buried piles. In addition, equipment installed on the various structures would be positioned to allow for ease of access to facilitate inspection.

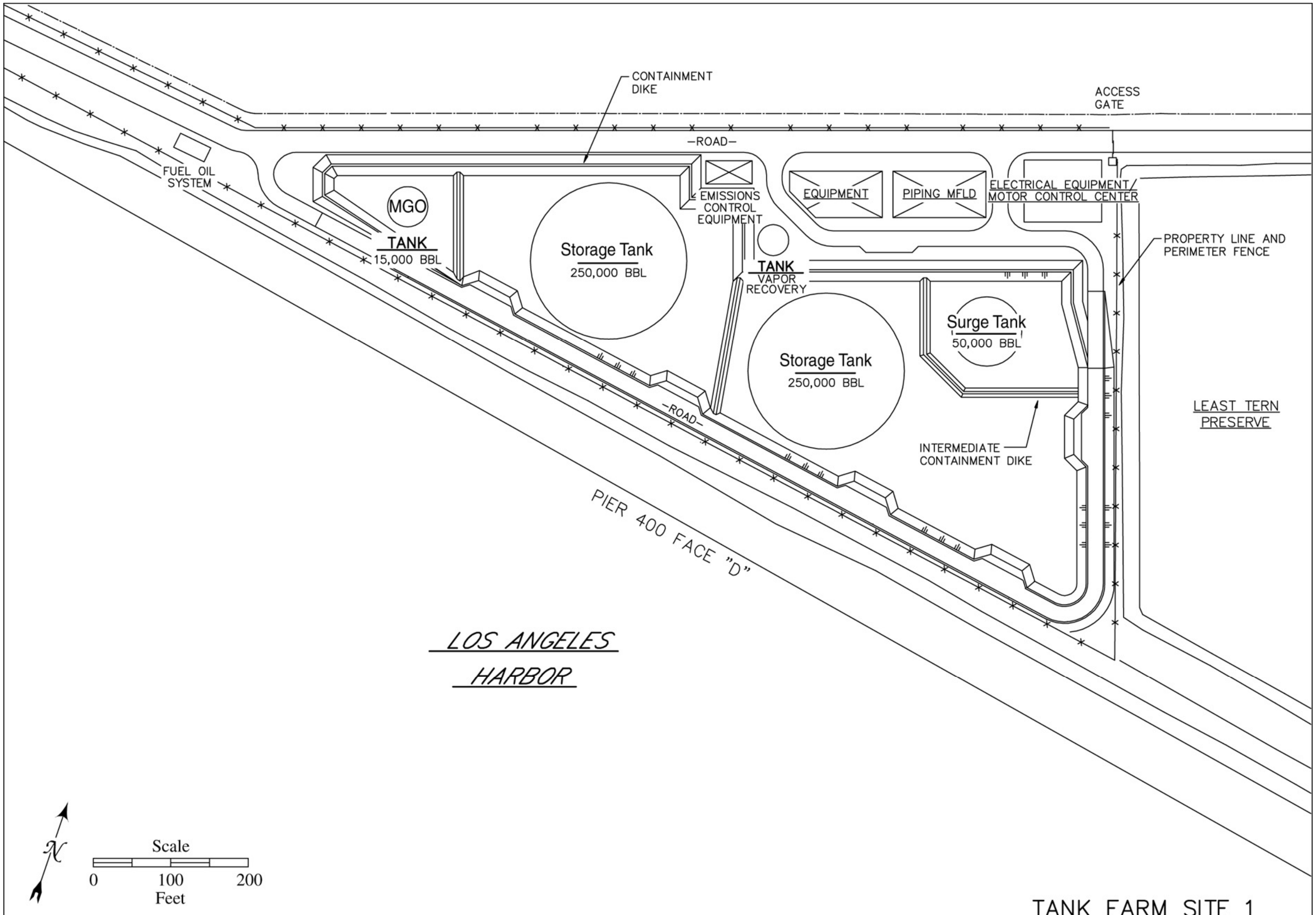
2.4.2.2 Tank Farms

The detailed layout for Tank Farm Site 1 is shown in Figure 2-4, and for Tank Farm Site 2 is shown in Figure 2-5. Table 2-3 also contains characteristics of each tank farm site. The two tank farms would have a total tankage of 4.0 million bbl of storage capacity, in addition to a 50,000 bbl surge tank and a 15,000 MGO tank that would provide MGO to vessels using the marine terminal. Both tank farms would include sound walls and manifolds; most piping within the tank farms would be belowground. Note that storm water management at the tank farm sites is described in Section 2.4.4.5.

Shore-Side Electric Pumps. Electric pumps would be installed at Tank Farm Site 1 for pumping cargo inland from Tank Farm Site 1. Because of the use of shore-side electric pumps, the vessel's boiler-fired pumps would pump oil only from the cargo holds over the rail to Tank Farm Site 1. The shore side electric pumps would move the oil from that point inland.

Tankage. The proposed Tank Farm Site 1 would include two 250,000-bbl internal floating roof tanks, one internal floating roof 50,000-bbl working capacity offload/back-flush tank (surge tank), and one 15,000-bbl storage tank MGO. The 50,000-bbl tank (and both 250,000-bbl tanks) would be designed to receive direct offloads of crude oil from vessels at maximum offload rates, thereby allowing for smooth operation of the shore-side pumps. The tanks at proposed Tank Farm Site 2 would all be internal-floating-roof 250,000-bbl tanks for temporary storage and transfer of crude oil and partially refined crude oil.

All tanks would utilize Best Available Control Technology (BACT) and be BACT-compliant as required by the SCAQMD. BACT is the most stringent emission limitation or control technique that has been achieved in practice or is considered to be technologically feasible (SCAQMD Rule 1302 (h)). Each tank would have a fixed roof in addition to the internal floating roof. The floating roofs control emissions by covering the crude oil, thus preventing vapors from forming. As required by SCAQMD rules, the internal floating roofs would be equipped with primary and secondary seals around their perimeters.



Source: PLAMT 2007; SPEC Services 2007

Figure 2-4. Proposed Tank Farm Site 1 (Pier 400 Tank Farm)

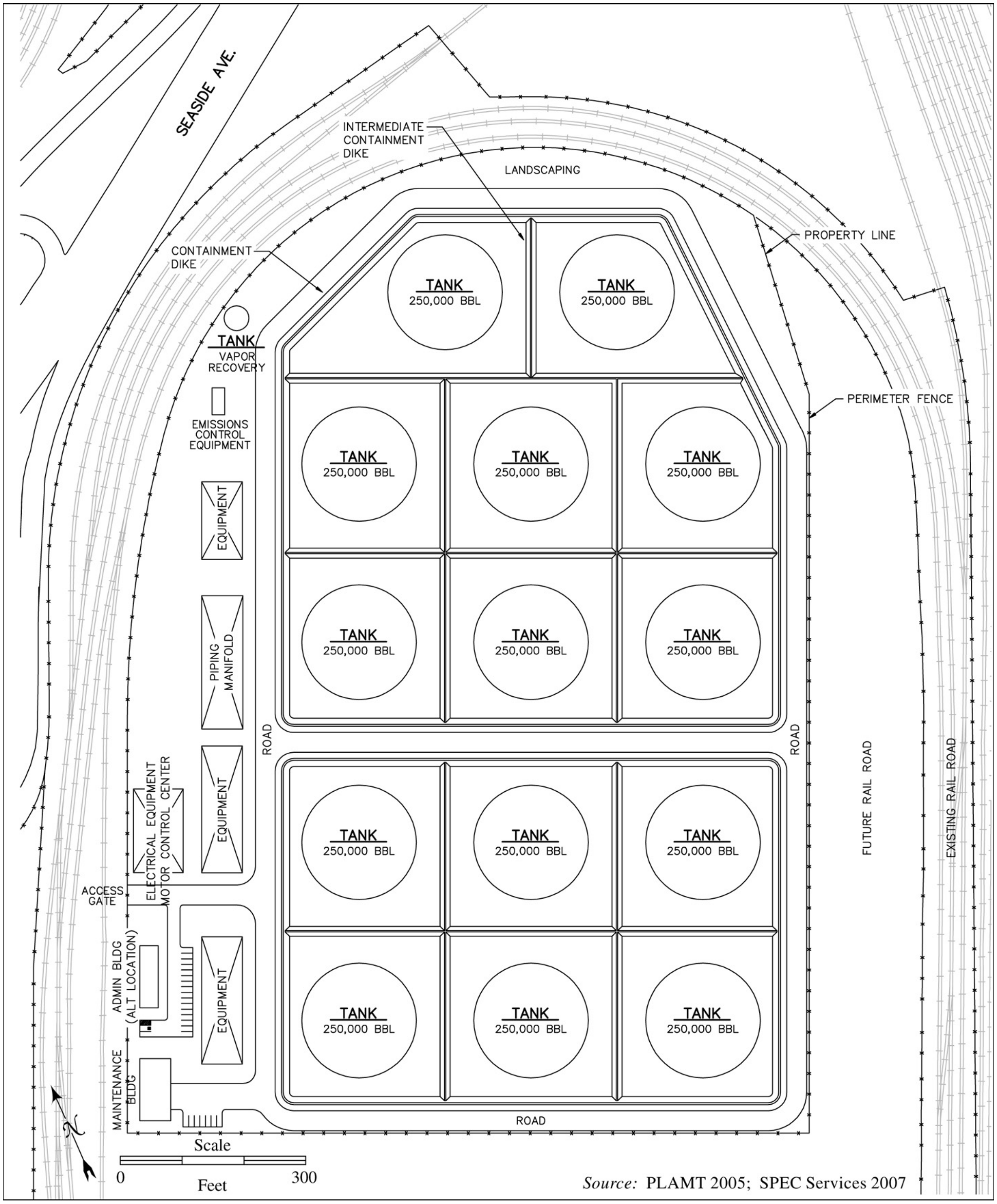


Figure 2-5. Proposed Tank Farm Site 2 (Terminal Island Tank Farm)

Table 2-3. Tank Farm Site Descriptions

Component	*Tank Farm Site 1 (Pier 400 Tank Farm Site)*	*Tank Farm Site 2 (Terminal Island Tank Farm Site)*
Parcel size	10.7 acres (4.3 ha)	37.0 acres (15.0 ha)
Crude oil tanks	Two 250,000-bbl tanks (internal floating roof)	Fourteen 250,000-bbl tanks (internal floating roof)
Other liquid tanks	One 50,000-bbl crude oil surge tank (internal floating roof) One 15,000-bbl MGO storage tank	None
Tank vapor recovery	Both Sites: Vapor holding tank, vapor blower, and thermal oxidizer	
Pumping equipment	Crude oil transfer pumps, variable frequency drives, mixing pumps, and sump pumps	Crude oil transfer pumps, tank proportioning pumps, and sump pumps
Pipeline pigging facilities	Both sites: Pipeline scraper traps	
Buildings	Motor Control Building	Motor Control Center, Tank Farm Operator Office and Control Building
Parking	For operator office/control building	For control building, tank farm operations, and security and maintenance vehicles
Fire-fighting system	Firewater main, foam storage tanks and proportioning skids, fire monitors, electric motor-driven firewater pump, diesel firewater pump and back-up sea water pumps	Firewater main, foam storage tanks and proportioning skids, fire monitors, electric motor-driven firewater pump, diesel firewater pump
Sanitary sewer connection	Both sites: Existing LA Department of Sanitation sewer system	
Site security	Perimeter Security Fence, 24-hour Guard Service, Cameras with local or remote monitoring and control, and Perimeter Security System with remote monitoring and alarm notification	Perimeter Security Fence, Cameras with local or remote monitoring and control, and Perimeter Security System
Site lighting	Both sites: As required for safe operation, in accordance with City of Los Angeles Building Codes and USCG requirements (described in detail in Section 3.1 Aesthetics).	
Storm water system	Both sites: storm water collection, treatment, and discharge system	

Tank farms would be equipped with a tank vapor collection system to collect emissions generated during tank filling operations when the tank roofs are being floated. The floating roof, with the primary and secondary seals, would be used to control emissions at all other times. Each system would consist of vapor collection pipe headers, a vapor blower, vapor bladder tank, vapor discharge headers, and associated controls. The collection systems would transport the vapors to incineration systems. The floating roof, primary and secondary seals, and vapor collection and control are considered to be BACT for crude oil storage tanks and meet the requirements of the SCAQMD for such tanks.

Thermal oxidizers would be installed at Tank Farm Sites 1 and 2 to incinerate all vapors collected in the vapor holding tanks. Each of the tank vapor collection and incineration systems would be designed for automatic control from a local control system and would be monitored remotely from the Marine Terminal Control Building.

Each tank would be equipped with secondary leak detection systems, overfill protection, and instrumentation to monitor temperature as well as to monitor and control tank level in order to prevent releases to soil or groundwater. Each tank would be designed to allow for monitoring and control from the Marine Terminal Control Building.

Each tank area would be enclosed by a dike wall with the capacity to provide for full containment of the entire volume of the largest tank in the diked area, plus the volume equal to the 24-hour rainfall associated with a 25-year rain event, in the event of a spill or tank breach, in accordance with state and local codes and guidelines. Additionally, intermediate dikes designed to contain 10 percent of the tank volume would be constructed around individual tanks.

Fire-Fighting System. The fire-fighting systems for each area of the proposed Project would be designed in accordance with applicable City of Los Angeles fire codes. Each tank farm would be protected by a firewater loop line and equipped with a foam storage tank and proportioning skid. The crude oil tanks would be equipped with a foam ring and foam chambers. The fire-fighting system for Tank Farm Site 1 would be part of the same system as previously described for the Marine Terminal. Firewater for Tank Farm Site 2 would be provided through a connection to the LADWP water main. Two pumps would be installed in each tank farm: the primary pump would be driven by an electric motor and the secondary pump would be driven by a diesel engine equipped with its own diesel fuel storage tank

Electrical Power. Electrical power at Tank Farm Site 1 would be provided by the same system that would service the Marine Terminal, as previously described. Tank Farm Site 2 would be served by a 34.5-kV electrical transmission service provided by the LADWP. The service would include the extension of the existing 34.5-kV transmission line, a substation, and associated metering.

The proposed electrical facilities would include associated electrical switchgear, step-down transformers, motor control centers, ground systems, conduit, wire, lighting, and associated electrical equipment.

Utilities. Potable water and sanitary sewer service would be provided to both tank farm sites by the Port. Connection locations would depend on final site configurations.

Buildings. An approximately 4,800-sq ft (446-sq m), single or two-story motor control center building would be installed at Tank Farm Site 1. This building would contain the electrical switchgear, low voltage step down transformers, and the motor control center that would service all electrical equipment. Tank Farm Site 2 would include one 15,000-sq ft (1,394-sq m) two-story building to house a motor control center and an office/control center.

2.4.2.3 Pipelines

The general locations of each of the pipeline routes are shown in Figure 2-1, and the characteristics of the pipelines are summarized in Tables 2-4, 2-5, and 2-6. Figures 2-6, 2-7, 2-8, and 2-9 provide close-up detail about the routes of the various pipeline segments. The proposed Project pipeline route would start with a 42-inch diameter pipeline (Segment 1; Figure 2-6) that would run from the Marine Terminal to the northern boundary of Tank Farm Site 1, and then along the southern edge of Pier 400 and on the Pier 400 Causeway to Tank Farm Site 2. Two 36-inch diameter pipelines (Segments 2a and 2b; Figure 2-6) would connect Tank Farm Site 2 to the existing network of pipelines at Ferry Street. In addition, another 36-inch diameter spur (Segment 2c; Figure 2-6) would run from the existing network at Ferry Street into the ExxonMobil Southwest Terminal.

Table 2-4. Pipeline Segment 1

Component	*Description*
Route	From Marine Terminal to Tank Farm Site 1, then to Tank Farm Site 2
Inside diameter	42 inches
Approximate Length	20,650 feet
Length on LAHD property	20,650 feet
Nominal Flow Rate[1]	100,000 bbl/hr
Buried	Yes (except at causeway bridge on Navy Way)
Approximate Depth	4 feet (except 4-8 feet at origin at Marine Terminal)
Primary Construction Method	Open cut (trench)
Method for Street Crossings	Primary: Slick bore; Alternative: Directional Drill or Open Cut
Method for Railroad Crossings	Primary: Slick bore; Alternative: Directional Drill
Method for Water Crossings	Primary: installation on existing bridge or trestle; Alternative: Slick Bore or Directional Drill
External Coating	Yes
Cathodic Protection	Yes
Number of Mainline Valves	2
Pipeline Pigging Facilities	One 42" Pipeline Pig Receiver (Terminal)
Pipeline Leak Detection System	Meters, instrumentation, computer hardware and software

Note:
1. Nominal Flow Rate based on Basra Light crude oil. Rates would vary depending on crude type and delivery constraints.

Table 2-5. Pipeline Segments 2a, 2b, and 2c

Component	*Segment 2a*	*Segment 2b*	*Segment 2c*
Route	From Tank Farm Site 2 to Existing 36" Line	From Tank Farm Site 2 to Existing 36" Line	From Existing 36" Line to ExxonMobil Southwest Facility
Inside diameter	36 inches	36 inches	36 inches
Approximate Length	1,800 feet	1,800 feet	100 feet
Length on LAHD property	1,800 feet	1,800 feet	0 feet
Nominal Flow Rate	45,000 BPH	85,000 BPH	85,000 BPH
Buried	Yes	Yes	Yes
Approximate Depth	4 feet	4 feet	4 feet
Primary Construction Method	Open cut (trench)	Open cut (trench)	Open cut (trench)
Method for Street Crossings	Both segments: Primary: Slick bore; Alternative: Directional Drill or Open Cut		N/A
Method for Railroad Crossings	Both segments: Bore (across RR tracks at west edge of Tank Farm Site 2)		N/A
Method for Water Crossings	N/A	N/A	N/A
External Coating	Yes	Yes	Yes
Cathodic Protection	Yes	Yes	Yes
Number of Mainline Valves	1	1	1
Pipeline Pigging Facilities	One 36" Pipeline Pig Launcher (Origin)	One 36" Pipeline Pig Launcher (Origin)	One 36" Pipeline Pig Receiver (Terminus)
Pipeline Leak Detection System	Meters, instrumentation, computer hardware and software		

Table 2-6. Existing 36-Inch Diameter Pipelines

Component	*Mormon Island*	*ExxonMobil Southwest Terminal*
Route	Connect Proposed Pipeline Segment 2a to Proposed Pipeline Segment 3	Connect Proposed Pipeline Segment 2b to ExxonMobil Terminal and Proposed Pipeline Segment 2c
Inside diameter	36 inches	36 inches
Approximate Length	3,900 feet	2,300 feet
Length on LAHD property	3,900 feet	2,300 feet
Nominal Flow Rate	45,000 BPH	85,000 BPH
Buried	Yes	Yes
Approximate Depth	4 feet	4 feet
Primary Construction Method	N/A (no construction as part of proposed Project)	
Method for Street Crossings	N/A (no construction as part of proposed Project)	
Method for Railroad Crossings	N/A (no construction as part of proposed Project)	
Method for Water Crossings	N/A (no construction as part of proposed Project)	
External Coating	Yes	Yes
Cathodic Protection	Yes	Yes
Number of Mainline Valves	1	0
Pipeline Pigging Facilities	Included with other facilities	One 36" Pipeline Pig Launcher (Terminus)
Pipeline Leak Detection System	Included with other facilities	One meter, instrumentation, computer hardware and software

The applicant has acquired entitlements to use the existing 36-inch diameter pipelines shown on Figure 2-6 from near Seaside Avenue on Terminal Island to the area of Berth 174 on Mormon Island. A new, directionally-drilled, 36-inch diameter pipeline (Segment 3; Figure 2-7) would run from Berth 174 to the northern end of Mormon Island and from there to Site A at Henry Ford Street, where a pig launching facility would be located. A new 24-inch diameter pipeline (Segment 4; Figure 2-8 and Figure 2-9) would extend to the Dominguez Channel and onto the existing Valero Refinery and to existing pipeline systems nearby, and a new 16-inch diameter pipeline (Segment 5; Figure 2-8) would extend from the pig launching station northward to another existing Plains All American pipeline (located near the Air Products process plant at the corner of Alameda and Henry Ford Avenue).

All pipelines would be installed belowground, with the exception of the water crossings at the Pier 400 causeway bridge, at the pig receiving and launching station, at the Valero pipe bridge that crosses the Dominguez Channel west of the Ultramar/Valero Refinery, and within parts of the Marine Terminal and Tank Farm Sites. It should be noted that the line sizes and routings detailed in the text and tables are preliminary and subject to change during the detailed engineering process. The design specifications of the pipelines, piping, and related facilities are presented in Appendix E.

Proposed Pipeline Segment 1. Pipeline Segment 1, a 42-inch pipeline (Figure 2-6, Table 2-4), would transport crude oil from the Berth 408 unloading operations to the tank farms. Pipeline Segment 1 would originate at the Marine Terminal approximately 4 to 8 feet (1.2 to 2.4 m) underground on the southwestern side of Pier 400 (Face 'C'). The pipeline would run south and then east along the Marine Terminal access road for approximately 2,400 ft (731 m) to Tank Farm Site 1 on Face D of Pier 400. From the pump and meter area at Tank Farm Site 1 the pipeline would run east and along Navy Way to the east end of Face F where the Navy Way roadway is elevated.

Figure 2-6. Proposed Pipeline Segments 1, 2a, 2b, and 2c

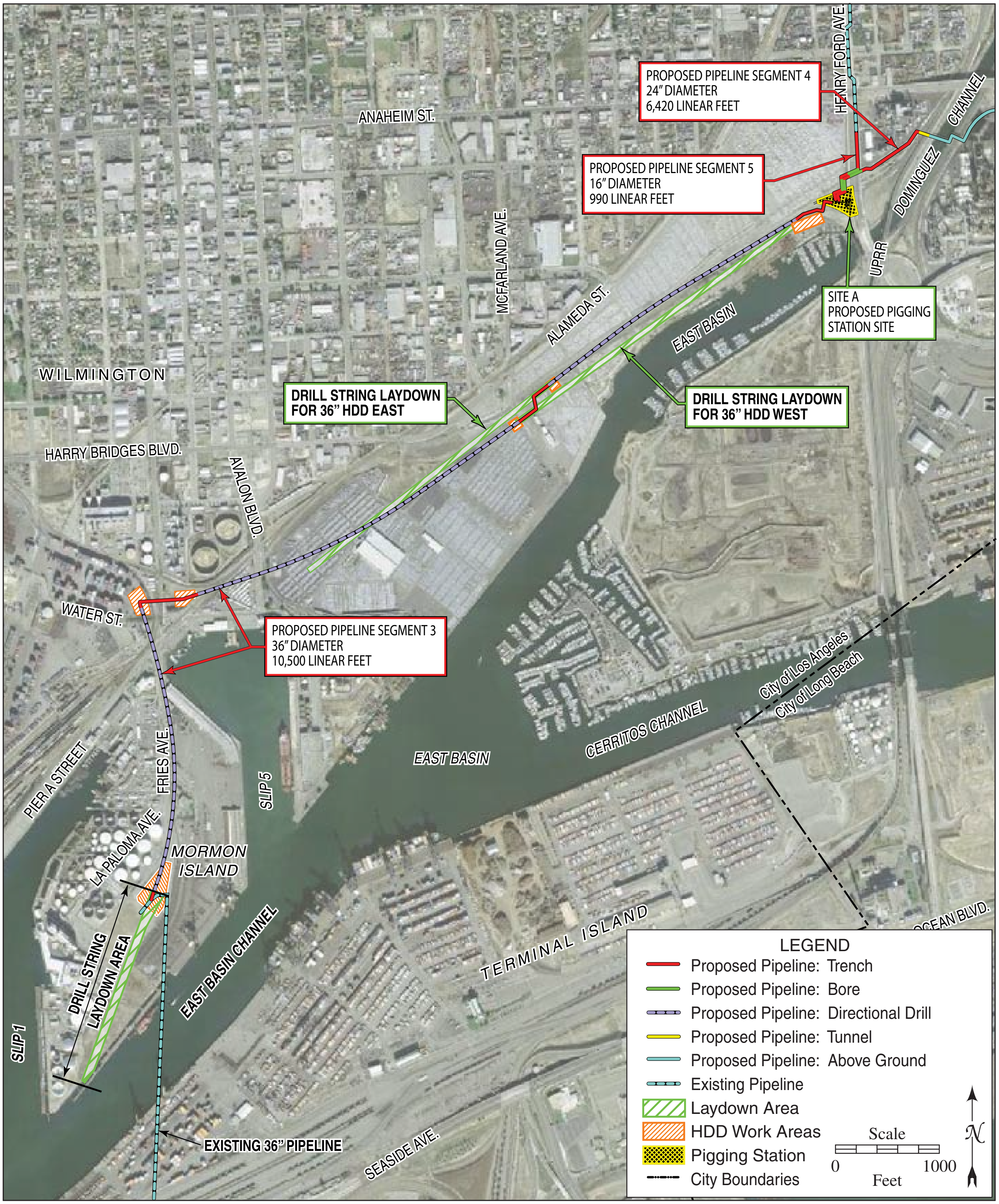


Figure 2-7. Proposed Pipeline Segment 3

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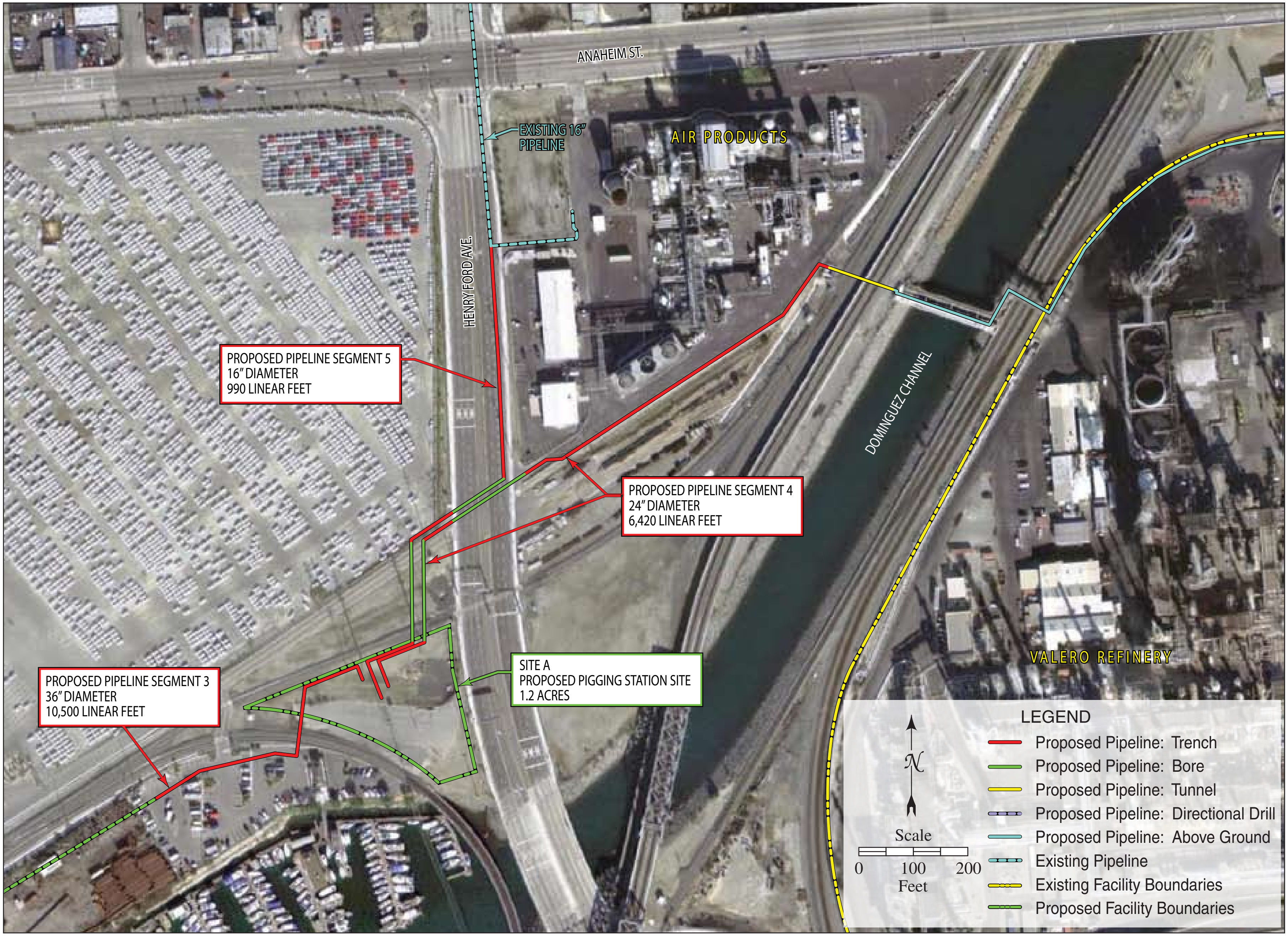

Figure 2-8. Proposed Pipeline Segments 4 and 5

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Figure 2-9. Proposed Pipeline Segment 4 - East End

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At that point the pipeline would leave Navy Way and run north in the unimproved area to the east of Navy Way, paralleling the elevated roadway on the east to an aboveground crossing of the causeway bridge. After crossing the bridge, the line would return below ground and continue north in the unimproved area east of Navy Way until entering the northeastern corner of Tank Farm Site 2. In the underground area, this line would be installed (via trench or bore) approximately 3-4 feet below ground (except in its origin at the Marine Terminal, where it could be 4-8 feet underground). Figure 2-6 illustrates approximately where the pipeline would be bored, trenched, and aboveground.

The applicant anticipates installing remotely operated mainline block valves at the beginning and end of the 42-inch pipeline, along with the connections to the tank farm sites. Each valve would be monitored and controlled from a yet-to-be-determined, project-related building.

Proposed Pipeline Segments 2a, 2b, and 2c. Segments 2a and 2b would be 36-inch diameter pipelines running from Tank Farm Site 2 to an existing 36-inch diameter pipeline located in Ferry Street (Table 2-5 and Figure 2-6). Both segments would originate from a manifold on the west side of Tank Farm Site 2 and connect to existing 36-inch pipelines west of the U.S. Customs House on Terminal Island. Each of segments 2a and 2b would be approximately 1,800 ft (549 m) in length. Pipeline segments 2a and 2b would both be buried about 3-4 feet below ground, by trenching and boring (see Figure 2-6).

The proposed alignment of Pipeline Segments 2a and 2b would originate on the west side of Tank Farm Site 2, cross through the U.S. Customs House parking lot via a trench, and cross Ferry Street north of the U.S. Customs House via a bore. At this point, Pipeline Segment 2a would turn north to intersect an existing 36-inch diameter pipeline that crosses the Cerritos Channel to a tank farm at Berth 174 on Mormon Island (and then connect to another new pipeline segment, Segment 3, described below). Pipeline Segment 2b would follow the same route as Segment 2a to the existing pipeline, but product routed through Segment 2b, once it entered the existing pipeline, would travel south and tie in to an existing pipeline that runs south down Ferry Street to Pilchard Street near the ExxonMobil Southwest Terminal.

An alternate alignment for segments 2a and 2b could be employed depending upon the ultimate location and configuration of the proposed Joint Container Inspection Facility. A possible location of that facility is the U.S. Customs House property, and if that proves to be the case, segments 2a and 2b would be re-routed to the south of the current U.S. Customs House property and would connect to the existing 36-inch pipelines at the intersection of Ferry Street and Pilchard Street (Figure 2-6).

Pipeline Segment 2c would be a short tie-in connecting the existing Plains pipeline to the ExxonMobil Southwest terminal, north of Pilchard Street near Earle Street. This segment would be trenched and would be located almost entirely on land owned by ExxonMobil (Figure 2-6).

Each of these pipelines would have remotely operated mainline block valves at the beginning and end (i.e., including at the connections to the tank farm sites). Each valve would be monitored and controlled from the Marine Terminal Control Building.

36-Inch Existing Pipeline. The existing 36-inch pipeline would be used to transport crude oil transferred from Tank Farm Site 2 through Pipeline Segment 2a to the ExxonMobil Southwest Terminal, and through Pipeline Segment 2b to Pipeline Segment 3. Table 2-6 summarizes key characteristics of this pipeline.

Proposed Pipeline Segments 3, 4, and 5. These proposed pipelines would connect the existing 36" pipeline described above to the Ultramar/Valero Refinery and to other pipeline connections. The proposed 36-inch pipeline (Segment 3; Figure 2-7) would proceed north about 2,800 ft (853 m) to Alameda Street and then northeast another 11,200 ft (3,412 m) roughly along Alameda Street to Site A. Table 2-7 shows key characteristics of all three segments.

Table 2-7. Proposed Pipeline Segments 3, 4, and 5

Component	*Proposed Pipeline Segment 3*	*Proposed Pipeline Segment 4*	*Proposed Pipeline Segment 5*
Route	From Existing 36" pipeline on Mormon Island to Site A	Connect proposed Pipeline Segment 3 at Site A to Ultramar/Valero Refinery and other Plains All American Pipeline pipelines and other customer pipelines located east of the Terminal Island Freeway.	From Site A to Existing 16-inch Plains Pipeline
Inside Diameter	36 inches	24 inches	16 inches
Approximate Length	14,000 ft	7,200 ft	1,000 ft
Length on LAHD property	14,000 ft	320 ft	970 ft
Nominal Flow Rate[1]	45,000 bbl/hr	45,000 bbl/hr	20,000 bbl/hr
Buried	Yes	Yes, except at Dominguez Channel Crossing	Yes
Approximate Depth	4 to 170 feet	4 feet	4 feet
Main Construction Method	Primary: HDD Alternative: Slick bore or open cut	Open cut	Open cut
Method for Street Crossings	Primary: HDD Alternative: slick bore or open cut	Primary: slick bore Alternative: directional drill or open cut	Primary: slick bore Alternative: directional drill or open cut
Method for Railroad Crossings	Primary: HDD Alternative: Slick bore	Primary: slick bore Alternative: HDD	Primary: slick bore Alternative: HDD
Method for Water Crossings	N/A	Installation on existing trestle (owned by Valero)	N/A
External Coating	Yes	Yes	Yes
Cathodic Protection	Yes	Yes	Yes
Number Mainline Valves	Two	Two	Two
Pipeline Pigging Facilities	One 36" Pipeline Pig Receiver at Site A	Two pigging facilities (origin and terminus)	One Pig Launcher/Receiver at Site A (tie-in to Pipeline Segment 3)
Pipeline Leak Detection System	Yes	One meter, instrumentation, computer hardware and software	Included with other systems

From Site A, a new proposed 24-inch pipeline (Segment 4; Figure 2-8 and Figure 2-9) would connect to the Ultramar/Valero Refinery. This pipeline route would traverse north to a bored crossing of the railroad tracks, turn east to a cut or bored crossing of Henry Ford Avenue, near the Air Products facility's southern driveway, then leave LAHD property. It would continue northeast in the Air Products driveway and plant area, then turn east to connect to a pipe tunnel under the railroad tracks, and run along a trestle over the Dominguez Channel. On the east side of the channel the pipeline would enter the Ultramar/Valero Refinery and connect to other pipeline systems nearby.

Also from Site A, a new proposed 16-inch pipeline (Segment 5; Figure 2-8) would extend about 1,000 ft (303 m) north to an existing Plains All American pipeline located in Henry Ford Avenue near the corner of Alameda and Henry Ford Avenue. This existing pipeline extends north to the ConocoPhillips refinery in Carson.

As discussed in Section 2.2.3.3, Site A could be unavailable at the time of proposed Project construction, as some of the site is included for potential development as an alternative in the Schuyler Heim Bridge Replacement and SR-47 Expressway Project (CalTrans, 2007). Should Site A be unavailable, the new pigging station would be sited at an alternative location, called Site B (shown on Figure 2-10). In this option, Pipeline Segment 3 would run approximately 8,850 feet from Berth 174 to Site B. Site B would be used as a transition point for connecting to the ConocoPhillips Carson Refinery (via Pipeline Segment 5) and the Ultramar/Valero Refinery (via Pipeline Segment 4). Pipeline Segment 5 would run approximately 230 linear feet from Site B to the existing 16-inch diameter Plains pipeline that extends to the ConocoPhillips Carson Refinery. Pipeline Segment 4 would leave Site B and run south along Henry Ford Avenue and turn then turn east to connect to a pipe tunnel under the railroad tracks, and run along a trestle over the Dominguez Channel. On the east side of the channel the pipeline would enter the Ultramar/Valero Refinery and connect to other Plains pipeline systems nearby.

All pipelines would be installed belowground, with the exception of the water crossings at the Pier 400 causeway bridge, at the Valero pipe bridge that crosses the Dominguez Channel west of the Ultramar/Valero Refinery, and within parts of the Marine Terminal and Tank Farm Sites. The design specifications of the pipelines, piping, and related facilities are presented in Appendix E.

2.4.3 Construction

This section describes construction of the various elements of the proposed Project and then describes construction activities common to all elements.

2.4.3.1 Schedule and Labor Force

2.4.3.1.1 Schedule

The Marine Terminal, both tank farms, all pipelines, and all ancillary components would be completed within about 30 months of project approval (Figure 2-11). The construction project would not be divided into phases; all elements of the project would be built out simultaneously, although some would be completed before others.

Construction of the Marine Terminal would start approximately 3 months after approval of the proposed Project and would last for a period of approximately 16 months. Tank farm construction would start within a month of Project approval. Pipeline construction would start approximately three months after project approval and take approximately 15 months. The Marine Terminal, Tank Farm Site 1, the pipelines, and eight tanks on Tank Farm Site 2 would be completed within about 20 months from approval of the proposed Project, and the proposed Project would be ready to receive tanker vessels. Construction of the remaining six tanks on Tank Farm Site 2 would be completed about approximately ten months later. Thus, construction and operation would occur simultaneously for a period of approximately ten months.

During construction, property within and outside the project footprint would be used for various activities, including receipt of bulk materials by barge and rail, equipment laydown and staging areas, warehousing, construction worker parking, construction field office trailers, and pipeline construction material storage and equipment staging (see Section 2.4.3.5 for probable locations and uses).

2.4.3.1.2 Labor Force

Construction of the proposed Project facilities would require construction labor equivalent to approximately 732 full-time equivalent employees over the course of the construction period (i.e., an average of 293 jobs lasting for 30 months). During peak construction of each element, the construction workforce would include approximately 90 personnel for the Marine Terminal; 151 personnel for Tank Farm Site 1 and Pipeline Segment 1; 192 personnel for Tank Farm Site 2 and Pipeline Segments 2a, 2b, and 2c; and 90 personnel for Pipeline Segments 3, 4, and 5. Based on currently available construction information, the maximum expected construction workforce at any time during construction would be 469 personnel. However, to provide for a conservative analysis, the environmental analysis assumes there may be a period in which all sites are in peak construction. If this were the case, the construction workforce could be as many as 523 personnel at the various sites. Note that the peak construction workforce would not overlap the period of simultaneous construction and operation, since operation would not begin until most construction is complete. A majority of the work force would likely originate in southern California, mainly from the Los Angeles Basin.

For each construction site, most construction personnel would meet in one of the staging areas and go to the construction site in work trucks and buses. For the Marine Terminal, about 50 percent of the construction workforce would go to Temporary Construction Yard (TCY) 417 (see Figure 2-12 and Section 2.4.3.5), and the remainder would go directly to the Berth 408 area. For the other construction sites, about 80 percent of the construction personnel would meet at a TCY (see Section 2.4.3.5) and the remainder would go directly to the individual work areas. It is expected that there would be several contractors working on the site at one time and nearly all of the construction labor would be contracted from local trade unions. Arrangements would be made to optimize transportation for the project work force so as to minimize both the impact on the local commuter traffic and air pollution related to employee vehicles (see Section 3.6, Ground Transportation, for more information).

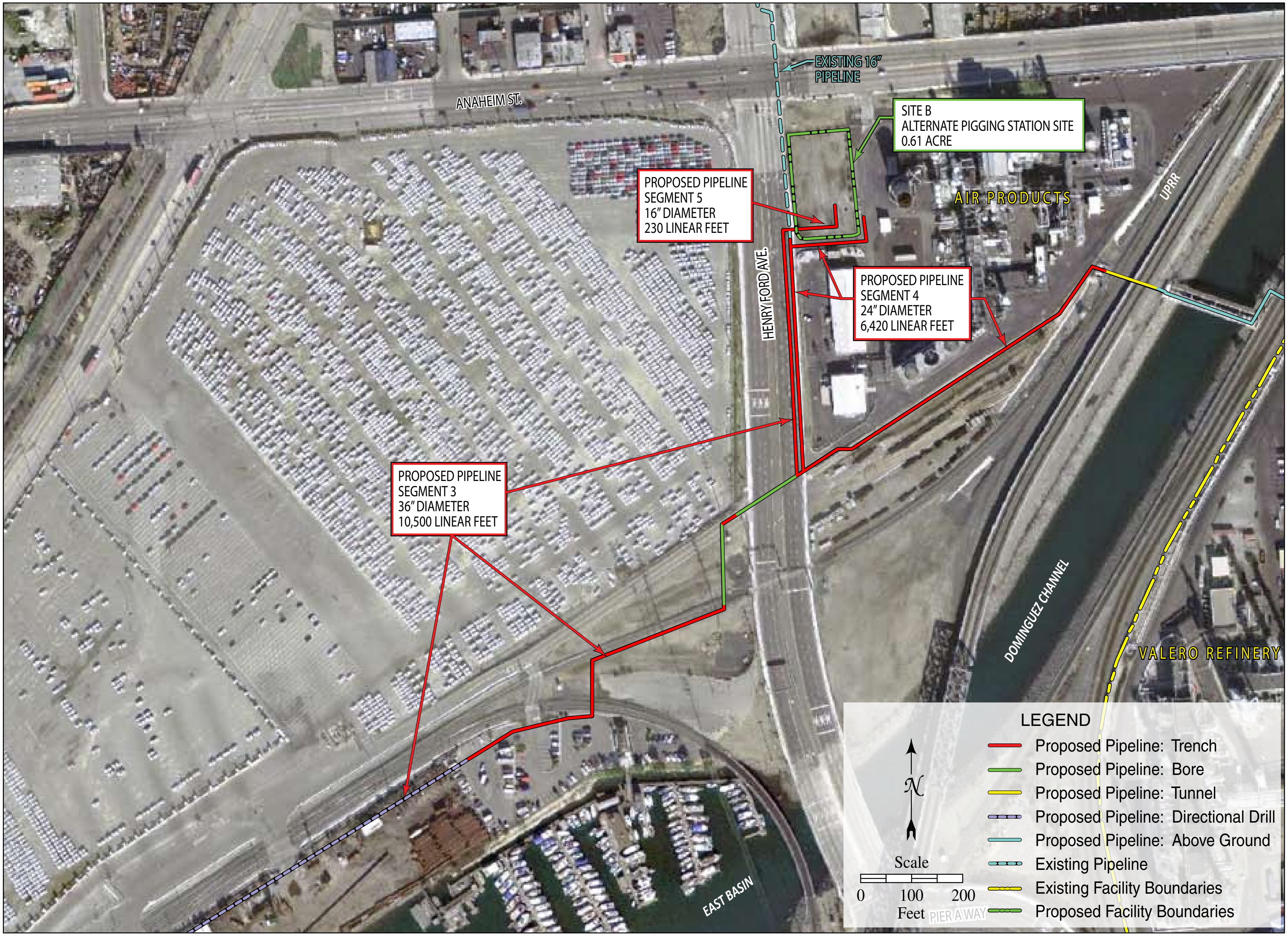

Figure 2-10. Proposed Site B Pigging Station and Pipeline Segments 3, 4, and 5 - East End

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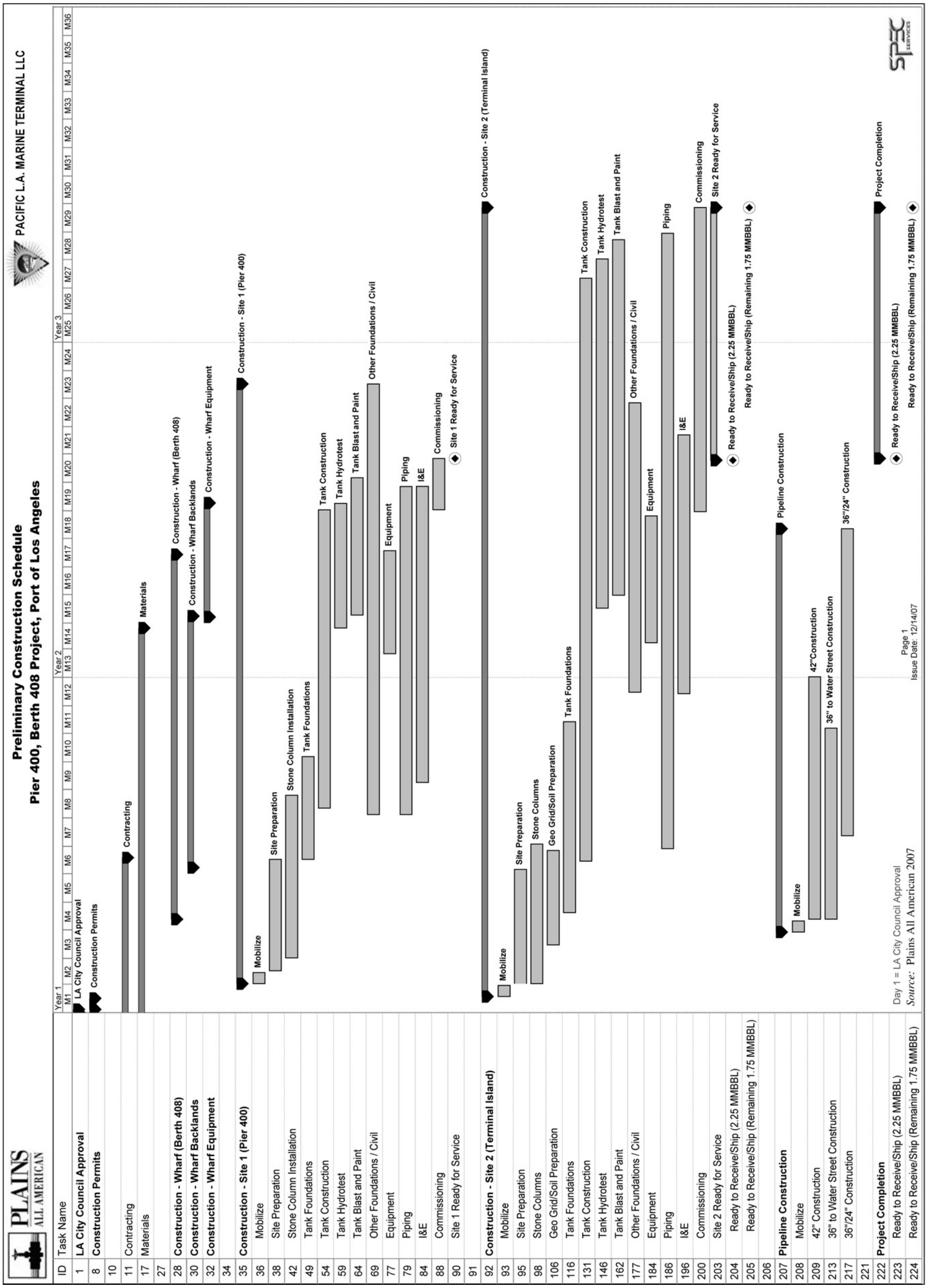


Figure 2-11. Proposed Project Construction Schedule

2.4.3.2 Marine Terminal Construction

The marine terminal at Berth 408 would be constructed using a combination of water-borne and landside equipment. Construction would include: site preparation; the installation of pilings and dolphins; fabrication of the unloading platforms and AMP and AMECS platforms, unloading arms, fendering system, trestles, roadways, pipeways, walkways, boat dock, and gangway tower; installation of the cargo and davit cranes, the spill boom storage facility, the firefighting system, lighting systems, cathodic protection systems, and navigational lighting systems; fabrication of the control systems, and construction of the buildings, utilities, fencing, paving, and lighting. No dredging or filling would be necessary.

The pilings supporting the berth platform structure, the AMP platform, the AMECS platform, and the mooring dolphins, would be installed by barge-mounted cranes and a pile driver, maneuvered by a tugboat and supported by small workboats. Pilings would likely be delivered by barge. The steel, concrete, piping, and other building materials needed for the platform structures, control buildings, fencing, lighting, utilities, and the AMP or AMECS infrastructure would be delivered by heavy-duty trucks or rail cars, and concrete trucks would deliver concrete. Welding-unit trucks would be needed to support the assembly of equipment and piping. Mechanical components such as electrical gear, pumps, control units, treatment system components, light standards, valves, etc. would be delivered by trucks and assembled into their respective systems on site. Asphalt trucks and specialized paving machinery would install the roadways and parking lots. Excavators and backhoes would be used to prepare the site for foundations, roadbed, and footings, and dump trucks would haul excess soil off site. Most of this equipment would be diesel-powered.

2.4.3.3 Tank Farm Construction

Construction of the tank farms would include site preparation, installation of stone columns (made from compacted gravel) for support under the tanks, construction of the containment berms and drainage systems, construction of the control buildings and assembly of the control systems, construction of roads and parking areas, fabrication of the tanks themselves, and installation of valves, manifolds, piping, utilities, lighting, fencing, and security systems.

Construction would require the use of excavators and backhoes, dump trucks, cranes, forklifts, paving equipment, and welding units. Steel plates, piping, building materials, control and monitoring equipment, pumps, and other elements would be delivered by heavy-duty trucks or rail cars, asphalt by specialized trucks, and cement by cement trucks. Most of this equipment would be diesel-powered.

2.4.3.4 Pipeline Construction

Conventional trenching would be used to install the pipelines on Pier 400, across Navy Way, through the Customs House parking lot, and at the pig launching area. In other locations, boring and drilling would be the primary method of placing the pipelines underground (see Figures 2-6, 2-7, 2-8, and 2-9). Construction would require the use of excavators, hoes, dump trucks, welding trucks, cement trucks, and specialized drilling equipment. Piping and other materials would be delivered by heavy-duty haul trucks or rail cars and offloaded by cranes and fork lifts. Most of this equipment would be diesel-powered.

System inspection of the completed pipelines would include hydrostatic testing to check for pipeline leakage and to confirm that the pipe, fittings, and welded sections can maintain mechanical integrity without failure or leak under pressure, as required by DOT. The tests would involve filling the pipelines with water under pressures higher than the maximum allowable operating pressure for at least 8 hours. Following the test, the water would either be transferred to the next pipeline section or discharged into an existing storm drain with the prior approval of the LARWQCB.

2.4.3.5 General Construction Practices

2.4.3.5.1 Equipment and Materials

Construction equipment and practices would conform to the Port's Sustainable Construction Guidelines. Specifically, all construction equipment would be fitted with mufflers and all engines would be maintained regularly. Welding machines would be electric, if available, or diesel, if not. Section 3.2 Air Quality provides additional information about mitigation measures that would apply to construction equipment.

Wastes generated from construction would generally be in the form of short sections of line pipe, wastes from welding and coating, scrap lumber and cardboard, and boxes and crates used in the shipment of materials. These materials would typically be hauled to the local recycling centers. Trash containers would be provided for daily refuse from construction workers. Other construction wastes might include contaminated soils, asphalt, concrete, and contaminated water used in hydrostatic testing of the pipelines. The non-hazardous wastes would be hauled to a sanitary landfill or recycler. The used hydrostatic test water would be treated as required and discharged under permit. Hazardous wastes in the form of contaminated soils or groundwater could be encountered during the construction of pipelines and Tank Farm 2. Those wastes would be sent to a permitted treatment or disposal facility in accordance with local, state, and federal regulations. Construction crews would use portable chemical toilets.

All field welding would be performed by welders to the applicant's specifications and in accordance with all applicable ordinances, rules, and regulations (see Appendix E). As a safety precaution, a minimum of one 20-pound dry chemical unit fire extinguisher would accompany each welding truck on the job.

2.4.3.5.2 Staging and Storage Areas

Plains and the Port have identified a number of potential sites outside the construction footprint for equipment laydown, material storage, construction management, and worker parking and staging (see Figure 2-12 and Table 2-8). Most of these are on Terminal Island and Pier 400 and include waterside sites, to allow delivery and staging for in-water construction, and sites with rail access. Two of the potential sites are on Port-owned property convenient to the pipeline routes on the mainland. Construction material would also be stored at the contractors' existing facilities as well as those of suppliers providing equipment, materials, or labor to the Project. Also, the proposed Pier 400 site and proposed tank farm sites would be used for construction staging and laydown, and staging areas for pipeline construction would be located along the pipeline routes (Figures 2-6 through 2-8). Alternative sites have been provided for cases where the proposed construction facilities and staging areas are not available (Table 2-8).

Approximately 240,000 tons of stone columns stone would be brought in via four Panamax vessels and offloaded to Tank Farm Site 1 and Tank Farm Site 2 (Table 2-8). Aggregate, concrete, asphalt, sand and slurry materials would be purchased locally (when available) and storage would be provided by local suppliers or in one of the designated storage areas. Staging and storage areas would be protected with storm water controls in accordance with the Project's construction storm water permit and Storm Water Pollution Prevention Plan (SWPPP); see Storm Water Management, below).Additional staging areas, such as an empty warehouse, parking area, or developed lot areas, may also be required. Areas to be used for staging and storage yards would be resolved between the project proponent, the project contractors, and the Port at the time of construction. A typical storage yard or staging area would be on a lot that has already been improved, with access to large commercial streets to allow easy movement of personnel and equipment. It is anticipated that the majority of materials would be brought in during off-peak traffic hours, with the primary exception being concrete, which must be mixed and delivered within a limited window of time.

Equipment Transportation

A majority of the heavy construction equipment and material would be delivered to the construction sites from local contractors' yards on lowboy trucks or trailers using modern trucks that would be required to use ultra-low-sulfur fuel. Mobile cranes and dump trucks would be driven in as well and will also be using the most appropriate low sulfur fuels available.

Utility and Services Requirements

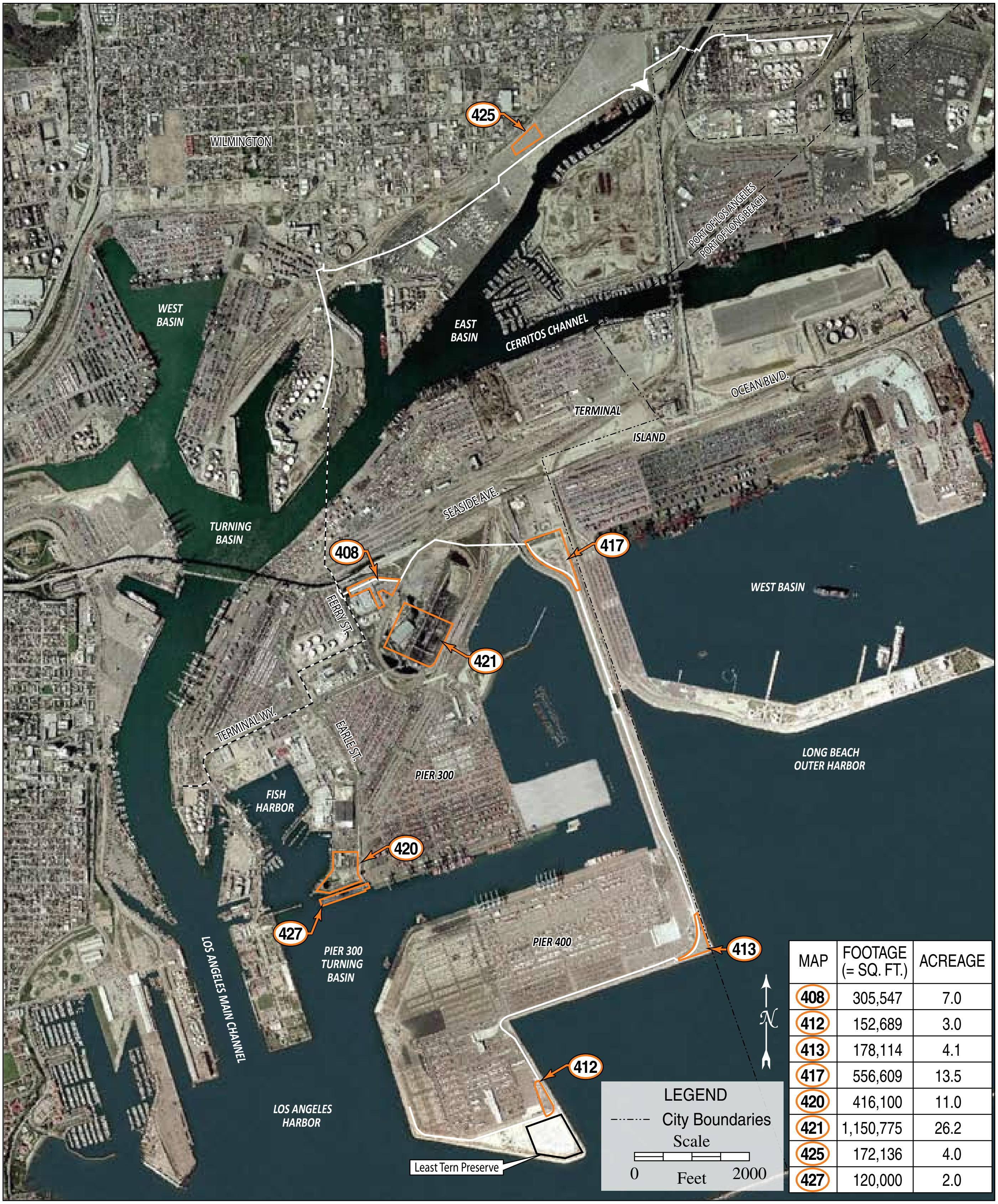
Most construction equipment would require either gasoline or diesel fuel. Welding machines would mostly use electric power, but ultra low sulfur diesel or California Air Resources Board (CARB) unleaded Phase III fuel may be necessary in areas where electric welding machines are not applicable.

Water would be used, as necessary, to control fugitive dust and to wash streets as a supplement to sweeping streets. In addition to the daily construction water needs, hydrostatic testing of the pipeline segments would also require water. Hydrotest water would be obtained from the LADWP. To the extent practical, water would be transferred from one component to another to minimize the amount of water that would be used for hydrostatic tests. Hydrotest water would be collected, treated, and discharged in accordance with a National Pollutant Discharge Elimination System (NPDES) permit issued by the Los Angeles Regional Water Quality Control Board (LARWQCB).

Each construction site would require onsite diesel fuel generators for temporary supply of electricity. However, wherever possible, temporary connections to the existing power distribution system would be used.

Storm Water Management

All construction sites would be managed in accordance with the Project's NPDES storm water permit, which requires a SWPPP for each site. The SWPPPs would be developed by the Port, the applicant, and the construction management team, and no construction



MAP	FOOTAGE (= SQ. FT.)	ACREAGE
408	305,547	7.0
412	152,689	3.0
413	178,114	4.1
417	556,609	13.5
420	416,100	11.0
421	1,150,775	26.2
425	172,136	4.0
427	120,000	2.0

Figure 2-12. Proposed Project Temporary Construction Yards

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Table 2-8. Construction Facilities and Staging Areas

Activity	*Staging Requirement*	*Approximate Time Required*	*Proposed Area*
Landside construction support for the Marine Terminal	Material delivery and staging, equipment access, and construction employee parking.	16 months	Area adjacent to Berth 408
Construction employee staging – Marine Terminal, Tank Farm Site 1, and Pipeline Segment 1	Parking for construction employees and work buses/vans, for about half the construction personnel for the Marine Terminal, and 80 percent of the construction personnel for Tank Farm Site 1 and Pipeline Segment 1.	22 months	TCY 417
Construction employee staging – Tank Farm Site 2 and Pipeline Segments 2a, 2b, 2c	Parking for construction employees and work buses/vans, for about 80 percent of the construction personnel for Tank Farm Site 2 and Pipeline Segments 2a, 2b, and 2c. Communications and rest rooms.	28 months	TCY 408
Stone column stone offloading for Tank Farm 1[1]	Delivery of stone column rock material by Panamax size vessels (110,000 tons of material); requires 42 ft draft for vessels. Loading area for trucks.	4-5 months	TCY 412 (preferred) or TCY 427
Stone column stone offloading for Tank Farm 2[1]	Delivery of stone column rock material by Panamax size vessels (up to 130,000 tons of material); requires 42 ft draft for vessels. Loading area for trucks.	4-5 months	TCY 427 (preferred) or TCY 412 (alternative)
Tank steel	Staging for steel used to construct tanks (approximately 1,000 tons). Requires rail and truck access.	20 months	TCY 421
Warehousing (40,000 sq ft)	Temporary power, communications, and water supply; access for trucks and forklifts. Temporary storage of various materials (e.g., valves and instrumentation).	18 months	TCY 421
Pipe laydown area	Pipe bends/fittings, motor control center equipment, piping and electrical materials, equipment skids. Access for trucks, forklifts, and cranes.	18 months	TCY 417
Field Office[1]	Parking for approximately 50 field personnel plus facilities for meetings. Need for trailers, water, sewer, power and communications.	28 months	TCY 420 (preferred) or TCY 408 (alternative)
Pipeline Staging – Segments 3, 4, 5	Construction personnel parking, equipment staging, and material lay down for pipeline work. Temporary communications and power for field trailer and access for construction equipment and trucks.	18 months	TCY 425
Pipeline Staging – Segments 1, 2a, 2b, and 2c	Equipment staging and material lay down for pipeline work. Temporary communications and power for field trailer and access for construction equipment and trucks.	18 months	TCY 413

Notes:

TCY = Temporary Construction Yard (see Figure 2-12)

1. In cases where the availability of a preferred site at the time of construction is uncertain, alternative sites are shown.

would start until the SWPPPs had been approved by the Port. The SWPPPs would specify the best management practices (BMPs) to be followed at each site to minimize or eliminate discharges of water pollutants to surface and ground water via runoff from construction areas.

BMPs would include both procedural controls and structural controls. Procedural controls would include minimizing the amount of exposed soil at any one time during grading operations; washing dirt off construction vehicles before they leave the site; refueling construction equipment only in designated areas; keeping construction materials, fuels, lubricants, and solvents in designated containment areas; and conducting regular inspections of procedures and structures. Structural controls would include installing and maintaining berms, catchment areas, and filters, and installing grates and wheel washers at site exits. Contractors would be required to implement the provisions of the SWPPP, and the construction manager would be responsible for ensuring that compliance and for ensuring that the SWPPP is modified as necessary during the construction phase to respond to changing conditions and address BMPs that prove to be ineffective.

Public Services Relocation

As part of the proposed Project, the LAHD would prepare a Public Services Relocation Plan to address the public utilities and services that would require relocation or otherwise be affected during proposed Project construction. The Plan would be developed with input from the service providers for the proposed Project site and would be submitted to City public services departments for review and approval. Construction affecting utilities could not begin until all service providers have approved the Plan. The Plan would be on file with the LAHD during construction and would include the following measures:

- New facilities (i.e., water, sewer, communications, gas, and electricity) would be installed before existing facilities are removed. Pipeline installation would occur within existing utility corridors/easements.
- As demolition activities progress, new facilities and connections would be activated and unnecessary facilities and connections would be eliminated.
- Minor service interruptions (defined as those lasting one day or less) could occur during the transition between former and newly installed facilities and services. Affected properties would be properly notified prior to any service interruption.
- Full access to all utilities would be restored after the completion of proposed Project construction.

2.4.4 Operations

The proposed Project is expected to begin vessel-unloading operations in 2010 with the first full year of operations expected in 2011. In the operation phase, the proposed Project includes the unloading of tanker vessels at the Marine Terminal, the transfer of MGO between vessels docked at the Marine Terminal and the MGO tank at Tank Farm Site 1, the transfer of crude oil into the surge tank at Tank Farm Site 1 and storage tanks at Tank Farm Sites 1 and 2, and the transfer of crude oil via Proposed Pipeline Segments 1, 2a, 2b, 2c, 3, 4, and 5. The operation of equipment in each facility would be controlled by human operators and/or automatic control systems installed at each site.

2.4.4.1 Tanker Operations

For analysis purposes, this document assumes that the terminal would receive 129 tanker vessels per year in its start-up year (2010) and an estimated 201 vessels per year at full operation from 2025 through 2040 (Table 2-9; see Appendix D1 for details of the calculations). Additionally, the terminal would receive about 6 barge calls per year in its start-up year (2010) and 12 barge calls per year at full operation from 2025 through 2040 for delivery of MGO to Tank Farm Site 1. The mix of vessel sizes and numbers in Table 2-9 is based upon the composition of the current world fleet adjusted to allow a somewhat larger proportion of the smallest vessels (Panamax) to call at the terminal.

Table 2-9. Vessel Mix and Terminal Throughput Under the Proposed Project

Vessel Type	*2010*	*2015*	*2025*	*2040*
Panamax (350,000 bbl)	26	12	18	18
Aframax (700,000 bbl)	32	24	36	36
Suezmax (1,000,000 bbl)	45	60	78	78
VLCC (2,000,000 bbl)	26	51	69	69
Total tanker vessel calls	129	147	201	201
Total throughput (bpd)	350,000	500,000	677,000	677,000
Total barge calls	6	8	12	12

Note:
The number of tanker calls depends on crude oil supply sources and vessel availability; the estimate shown here is based upon projections of the world tanker fleet and terminal throughput from Baker & O'Brien (2007), and is the highest reasonably foreseeable number of tanker calls under the proposed Project. See Appendix D1 for detailed calculations used to derive the estimate. These highest reasonably foreseeable numbers are assumed in the impact analysis in this SEIS/SEIR in order to capture all potential impacts of the proposed Project. A higher proportion of large vessels carrying larger loads would mean fewer vessel calls per year. Note that an emissions cap would be imposed in the South Coast Air Quality Management District (SCAQMD) operating permit, as described in Section 3.2 Air Quality. The actual number of tanker calls per year would be limited to comply with the SCAQMD permit condition; however, this SEIS/SEIR does not incorporate this limitation (in order to capture all potential impacts of the proposed Project).

The general operation of tanker vessels is described in Section 1.1.4; the description that follows highlights activities specific to the proposed PLAMT terminal.

Vessel Arrival. Tankers arriving at the terminal would be escorted by tugboats (three to four for VLCCs, three for Suezmax vessels, and two for Aframax and Panamax vessels). There would not be any restrictions to recreational vessels beyond normal navigational considerations while tankers are transiting within the Port or docking at the Berth. The facility would be designed so that tankers would be moored starboard (right) side to the mooring facility, although it is possible that some vessels could be moored port side to the facility. Once mooring is complete, the AMP system would be connected to the vessel and placed in operation (note that implementation of AMP would be phased in gradually over the life of the project; for the phase-in schedule see Section 3.2). Before the start of cargo discharge operations, the vessel would be completely encircled by a spill containment boom.

Vessel Unloading. To ensure environmental protection and safety, discharge from the vessel to the shore tanks would occur only after required exchanges of general and emergency information and ship inspections. The ship would use its pumps to move the cargo from the vessel's tanks to the surge and storage tanks at Tank Farm Site 1. From Tank Farm Site 1 to Tank Farm Site 2, electric shore-side pumps would be used. The discharge would begin at a slow rate so all systems could be checked for leakage. Once all the cargo is discharged from the ship, the ship's pumps would be stopped by the ship's officers, and the offloading arms would be drained and disconnected from the ship. After required information and records are exchanged between the ship and the terminal, the ship would be ready to leave the berth.

Emergency Shutdown. During the pre-operational information exchange, emergency shutdown systems and communication would be discussed via radio or telephone communication. If an emergency shutdown were to be required, either terminal personnel or ship personnel must inform each other that emergency shutdown is needed. This communication would be by radio or telephone. Once a shutdown is ordered, the ship would first stop its pumps and then all valves in the terminal and ship's cargo systems would be closed, thereby isolating the various segments of the system to prevent spillage. If the emergency were such to require the disconnection of the offloading arms, the arms would be drained, the hydraulic connector activated, and the arms disconnected.

Once unloading is completed and the vessel is cleared for departure, the emissions control system would be disconnected, the tanker would be unmoored and tugboats would arrive to escort the vessel out of the harbor.

2.4.4.2 Marine Terminal Operations

Marine Terminal operation would consist primarily of managing the flow of crude oil from the tankers; managing the vessel fuel transfer and storage; monitoring the unloading systems for leaks of oil or hydrocarbon vapors; and managing the spill detection and containment, fire suppression, oily water treatment, and storm water systems described in Section 2.4.2.

Hydrocarbon detection, shutdown, and alarm systems would monitor the ambient hydrocarbon vapor levels and trigger automatic shutdown of equipment if necessary. If oil should be observed on the water within the vessel containment boom, all operations would be stopped and the facility's Oil Spill Response Plan (OSRP), which would have already been approved by the USCG, California Department of Fish and Game, and Office of Spill Prevention and Response (OSPR), as well as other federal and state agencies, would be activated. The OSRP is required under state and federal regulations (SB 2040 and 40 CFR 300, the Hazardous Substances Pollution Contingency Plan). In accordance with USCG requirements, PLAMT would have a contractual agreement with a regional spill response cooperative that would serve as the emergency response contractor with primary responsibility for containment, cleanup, and health and safety at the Marine Terminal. These contractors are located in the San Pedro Bay area. In addition, operations personnel would be trained in the Incident Command System and oil spill containment and cleanup procedures.

Flame detectors would monitor strategic areas, such as pumping areas and the marine loading dock, and if a fire were detected the flame detectors would automatically trigger a fire alarm signal. Terminal operators would confirm that the alarm is an active fire, notify the Los Angeles Fire Department, and begin fire suppression activities.

The containment sump on the berth platform structure would have instruments to detect fluid level. When a high sump level is detected, for example following rain or a spill, a pump (or pumps) would automatically start, transferring the contents of the sump into the terminal oily water treatment system. If the pump(s) could not keep up with increasing fluid level, an alarm would shut down the terminal and trigger inspection of the facility by an operator and remedial actions.

Once the final terminal is constructed and all of the equipment and final materials are in place, a Terminal Operational Manual would be developed that would address a wide range of operational requirements and operating standards and procedures. Many of the issues described immediately above and in Appendix E would be addressed in great detail in the final Terminal Operational Manual. The manual would be subject to review and final approval by a number of regulatory oversight groups including the USCG, State Fire Marshal, CSLC Marine Facilities Division, LAFD, LAHD Homeland Security, OSPR, and other similar groups. Very specific operating and monitoring requirements are set and observed by each of these groups.

In addition to tanker calls, Berth 408 would also receive periodic deliveries of MGO from barges that, generally, would originate at other liquid bulk terminals within the Port or the Port of Long Beach. MGO would be offloaded from barges using the same 8-inch diameter unloading arm that would be used to load MGO onto tanker vessels. Offloading MGO from the barge would entail safety precautions similar to those used for offloading crude oil from tankers, including the use of a spill containment boom prior to unloading operations. The MGO would be pumped to the MGO tank at Tank Farm Site 1 and stored there until it is needed to refuel tanker vessels that call at the berth. The ability to offload and store fuel for tankers is essential for implementation of the fuel replacement strategy proposed by PLAMT (see Sections 2.4.1 and 3.2).

2.4.4.3 Tank Farm Operations

Tank farm operations would consist of managing the storage of crude oil, oily water (from the sumps and containment areas), and vessel fuel in the tanks; monitoring and maintaining the various control systems (leaks, vapor, storm water); and monitoring and maintaining the tanks, pumps, manifolds, and piping in the tank farms. The operations would be monitored and controlled from the Marine Terminal Control Building, but routine inspection and maintenance would take place on site.

2.4.4.4 Pipeline Operations

Pipeline operations would include monitoring and inspecting the pipelines, including the valves, the leak detection, pressure detection, and corrosion prevention systems, conducting periodic hydrostatic testing, and conducting periodic cleaning.

PLAMT would create an Inspection and Maintenance (I&M) Program to address programmed I&M requirements and requirements to monitor hydrocarbon emissions, i.e., volatile organic compounds (VOC) and reactive organic compounds (ROC). The I&M Program would be constructed to meet applicable requirements of the SCAQMD regulations. The pipeline routes would be visually inspected at least biweekly by line rider patrol in accordance with U.S. Department of Transportation (DOT) requirements (49 CFR Part 195) to spot third-party construction or other factors that might threaten the integrity of the pipelines. Additionally, inspection of highway, utility, and pipeline crossing locations would be conducted in accordance with state and federal regulations. Pipelines would be inspected annually at all test locations, quarterly at control points, and more than quarterly at cathodic protection systems to ensure corrosion control. Internal inspection pigs ("smart pigs") would be used to inspect and record the condition of the pipe. Smart pigs detect where corrosion or other damage has affected the wall thickness or shape. All pipeline valves would be inspected twice annually, not to exceed 7 months between inspections, and maintained as necessary to ensure proper operation.

Pipeline inspection and maintenance would include periodic hydrostatic testing to check for pipeline leakage and structural integrity, as required by DOT. Following the test, the water would either be transferred to the next pipeline section or discharged into an existing storm drain with the prior approval of the LARWQCB. The used water would be tested prior to disposal in the storm drain and treated as necessary to meet discharge limitations.

Pipelines would be cleaned periodically by pigging them. Pigging is a process that involves inserting a scraper or "pig" into a pipeline at a pig launcher point and retrieving it at a receiving point called a pig receiver or scraper trap. Pigs would be used to clean and/or inspect the pipelines.

All underground pipelines would have factory-applied external pipe coating with field applied joints that would provide the primary protection against external corrosion. In addition, all buried pipelines would have cathodic protection systems installed to provide secondary protection against corrosion. (Cathodic protection of pipelines and equipment is a method of preventing the corrosion of metals by passing an electric current through an electrolyte to the metal surface. This flow of electricity opposes the normal corrosion flow of electrons, thus protecting the metal.)

The pipeline safety system would rely upon a Supervisory Control and Data Acquisition (SCADA) system, which would gather data from remote points for use by automatic controls and safety systems. Pumps would be equipped with various safety devices such as pressure sensing devices, vibration monitors, seal failure monitors, over and under pressure monitors, no flow monitors, electrical current and temperature measuring devices, and safety release valves to assure reliable and safe operation at the pumps. Pressure control valves, pressure measuring devices, and pressure relief valves would protect the pipelines. The computerized SCADA system would constantly gather operational data from the critical sources throughout the system and automatically adjust the pressure and flow rate of the pipeline to provide for safe operation of the system. The system would also provide for continuous leak detection monitoring.

PLAMT would subscribe to the Underground Service Alert "one call" system that provides a single toll-free number for contractors and individuals to call prior to digging in the vicinity of any pipeline. Upon notification that a contractor or property owner intended to dig in the vicinity of a pipeline, the pipeline operator would mark the horizontal location of the pipeline. Additionally, a warning tape with the pipeline name would be buried approximately 18 inches (46 cm) above the new pipelines.

2.4.4.5 Operational Features Common to All Project Components

Site Access and Security. The proposed Project would operate in accordance with its Facilities Assessment Plan and Facilities Security Plan. Both plans have been approved by the USCG, as the primary regulatory authority over the security, design, and operational parameters of the Marine Terminal; the State Fire Marshal, as the state's representative to the DOT; and the CSLC, as the State of California's lead agency for oil terminal design and security. The specifics of the plans cannot be released to the public, as making such information available could compromise the terminal's long-term security.

The Marine Terminal and tank farm sites would be secure areas that would require traveling though gates that would be controlled and opened remotely by terminal security personnel. The Marine Terminal would also have a guard check-in building that would be staffed 24 hours a day, 365 days a year. The Marine Terminal and tank farms would have perimeter security barriers/fences around the entire property areas (with the exception of the ocean-front working areas).

The control consoles in the Marine Terminal Control Building would be manned 24 hours a day, 365 days a year by system controllers. Throughout the Project facilities, pumps, blowers, air compressors, and other electric motor-driven equipment would be equipped with various safety devices such as pressure sensors, electrical current and temperature measuring devices, flow-rate, and gravity monitoring devices, and safety relief valves to assure safe operation.

All field devices would integrate with the main control system, located in the control room at the Marine Terminal. The system would, at a minimum, be capable of receiving and sending information between all manufacturer-supplied process control systems, performing real-time polling and integration of safety process control systems, and monitoring and controlling pipeline operations, including pipeline leak detection.

Communications throughout the Project would include a hard-wired system to provide outside communication through the public telephone system and secure internal phone communication. Handheld radios would be the key mode of communications during docking, initiation of offloading, securing offloading, and ship departure. Marine frequency radios would also be required.

Storm Water Management. Storm water would be managed in accordance with the facility's SWPPP, prepared by the facility operator in compliance with the NPDES Non-Point Source Permit for General Industrial Activities and approved by the LARWQCB. Storm water from non-process areas such as parking lots, roads, building and vacant or landscaped areas would be collected into drainage systems and routed into the Port storm drain system. Storm water from process areas (e.g., manifold and equipment areas, equipment wash-down areas) would be collected in a tank. The tank would feed a treating system that would remove oil from the water to meet the requirements for discharge under an NPDES permit. The treated water would be discharged to the Port storm drain system. The collected oil would be returned to the oil storage system.

Storm water and fire-fighting water from each tank farm intermediate dike area would be collected through an isolation valve installed outside of each dike area to oil/water separators. The oil/water separators would remove oil from the water to meet the requirements for discharge under an NPDES permit. The water would be discharged to the Port storm drain system. The collected oil would be returned to the oil storage system.

Waste Management. Wastes such as oily rags and miscellaneous non-hazardous trash would be collected on site in containers and transported from the site periodically by approved methods. It is anticipated that very few hazardous materials would be used on-site -- the petroleum in the tanks and pipes would be the major hazardous substances on the site. Other potentially hazardous materials may include those which are typically used for maintenance activities only, such as cleaners, paints, coatings and various lubricants, as well as batteries. Used batteries would be stored in sealed containers and appropriately disposed of. Materials used in maintenance activities would not be stored on site, but would be brought to the site on an as-needed basis by company maintenance personnel and removed after the maintenance work is completed.

Emergency Response. PLAMT would prepare an Emergency Response Plan to specify measures to be taken in emergency scenarios. These documents would identify the responsible parties for the incident command and the supporting organizations/agencies. An emergency shutdown system would protect the marine terminal and tank farm systems in case of problems during operations or other natural or man made disasters or abnormal events. Clearly marked and strategically located emergency shutdown stations would allow operators to terminate transfer operations. The shutdown of the system would be programmed to occur in safe sequence to prevent surges in flow during the shutdown. Automatic shutdown would also be initiated due to a fire alarm, a high-high level alarm in a receiving tank, detection of a system leak, or other critical alarms detected in the central alarm panel. After shutdown has been completed, the system would be reset once the alarm condition has been cleared.

Emission Reduction Credits. The proposed Project would require SCAQMD permits to construct and operate some of its land based equipment, such as off-loading arms, tanks, and vapor destruction units. The SCAQMD process for permitting that equipment, would required PLAMT to purchase emission offsets also known as ERCs, at a ratio of 1.2 credits to 1 pound of calculated emissions prior to construction and operation of the proposed Project. Since the proposed Project could not be built and operated without those ERCs, this document assumes that PLAMT will be able to obtain enough ERCs to implement the proposed Project.

The equipment would be subject to the SCAQMD's New Source Review regulation, which incorporates certain vessel emissions as part of the process of permitting of the land-based equipment. Specifically, SCAQMD Rule 1306(g) states that vessel emissions during loading and unloading of cargo, and while at berth where the cargo is loaded or unloaded, must be accumulated as part of the permitted source. The rule also requires the accumulation of non-propulsion ship emissions while within Coastal Waters under SCAQMD jurisdiction (SCAQMD Rule 1306 (g)). Due to this linkage of the vessel's emissions with those of the stationary source, the "accumulated" vessel emissions would be required to be "offset" in accordance with SCAQMD Rule 1303(b)(2).

The SCAQMD offsetting requirement mandates that Project offset credits be provided in an amount equal to 120% of the Project operational emissions. In general, offset credits must be obtained from other permitted sources in the SCAQMD that have decreased emissions or ceased operations. The SCAQMD only allows certified emission reductions to be used as offsets. Before an ERC certificate is issued, an application must be filed and the SCAQMD must certify that the emission reductions are real, quantifiable, permanent, enforceable and not greater than the equipment would have achieved if operated with current BACT (SCAQMD Rule 1309). When an ERC certificate is issued, it is identified as either "coastal" or "inland" depending on the location where the emissions reduction took place. As a coastal project, the proposed Project would be required to use coastal ERCs to offset its regulated emissions (SCAQMD Rule 1303 (b)(3)). This requirement for offsetting vessel emissions has the effect of mitigating a portion of the emissions from the vessels, thereby reducing the overall regional air quality impact of the proposed Project. The ERCs would be in effect for the entire term of the lease.

2.4.5 Project Agreement History

The LAHD has not entered into any agreements with the Project applicant in regards to this Project other than the agreement that the applicant is responsible for paying for development of the environmental documentation necessary to support the permit application decision. The funding reimburses the LAHD for half of its cost to prepare the environmental document.

2.5 Alternatives

2.5.1 Background to the Alternatives Analysis

Development of the proposed Project on Pier 400 is consistent with a history of cargo forecasting, planning (including consideration of alternatives), and commitment of resources through construction of infrastructure to accommodate import of crude oil through the Port. The extensive planning history and resulting projects constructed in the Outer Los Angeles Harbor (see Section 1.1) have a significant bearing on the proposed plans to construct a crude oil marine terminal at Berth 408 and on the alternatives that need to be addressed as part of the environmental evaluation.

In 1987 the LAHD and the Port of Long Beach completed long-range cargo forecasting as a first step in planning for the accommodation of crude oil and other commodities in San Pedro Bay (WEFA 1987). These projections identified a modest increase in crude oil imports through the year 2020, but concluded that there would be need for additional marine receiving facilities due to the increasing amounts of crude oil that would be arriving from the Middle East.

Based on the WEFA and other studies, the LAHD and the Port of Long Beach embarked on a planning process to examine alternative means of accommodating projected cargo increases. This planning process became known as the 2020 Plan. A discussion of the 2020 Plan and its formulation, including a discussion of alternatives considered, is contained in the Final Feasibility Report for the Deep Draft Navigation Project conducted by the USACE (USACE 1992) and the Deep Draft Final Environmental Impact Statement/Environmental Impact Report (FEIS/FEIR) (USACE and LAHD 1992). As noted in Section 1.1.1.2, this document is a SEIS/SEIR to the Deep Draft FEIS/FEIR.

The primary planning objectives for development of the 2020 Plan involved accommodating future cargo throughput demands and ship requirements, reducing risks from hazardous cargo, and allowing for more efficient operations of existing terminals.

Various measures to accomplish these primary objectives were considered as a basis for developing alternatives. That analysis included:

- Alternative ways to accommodate future cargo throughput;
- Measures to accommodate ship requirements; and
- Measures to reduce risks related to hazardous cargo activities.

Following that alternatives analysis, the overall plan selected included:

- Optimization of existing facilities;
- Utilization of undeveloped and underdeveloped land;
- Landfill in the Outer Harbor for additional terminals; and
- Navigation channels to serve new terminals.

As part of the 2020 planning effort an Operations, Facilities and Infrastructure (OFI) Plan was prepared, which translated the cargo projections into what facilities would be needed to accommodate cargo anticipated at the Port (Vickerman et al. 1991). For the combined Ports, that plan included the addition of 2,400 acres of new terminal lands by the year 2020, even assuming that all existing lands and terminals were upgraded to their optimum condition. This formulation looked at a number of alternatives for configuration of these optimized and new facilities with selection of Plan B as the best alternative for developing new landfills in the Outer Harbor including a location for liquid bulk terminals on Pier 400 (Figure 2-13).

In 1986 and 1988, the Water Resources Development Act (WRDA) authorized the USACE to construct channel improvements in the Los Angeles and Long Beach Harbors subject to a favorable (feasibility) report. Specifically, WRDA of 1988 included consideration and evaluation of a “Los Angeles Crude Oil Transshipment Terminal Channel.” In accordance with the Congressional mandate, the USACE completed a Feasibility Report and Environmental Impact Statement for the Deep Draft Navigation Improvements, Los Angeles and Long Beach Harbors, San Pedro Bay, California (USACE and LAHD 1992).

The USACE Feasibility Report and EIS included an in-depth analysis and plan formulation, economic justification and alternatives discussion that resulted in the construction of Pier 400 for utilization, in part, for the handling of crude oil (USACE and LAHD 1992). The Feasibility Report examined structural and non-structural alternatives for accommodating the crude oil forecast including:

- Channel Improvements;
- Monobuoys;
- Use of Tides;
- Lightering;
- Use of other ports outside San Pedro Bay; and
- Use of other terminals in the San Pedro Bay Ports.

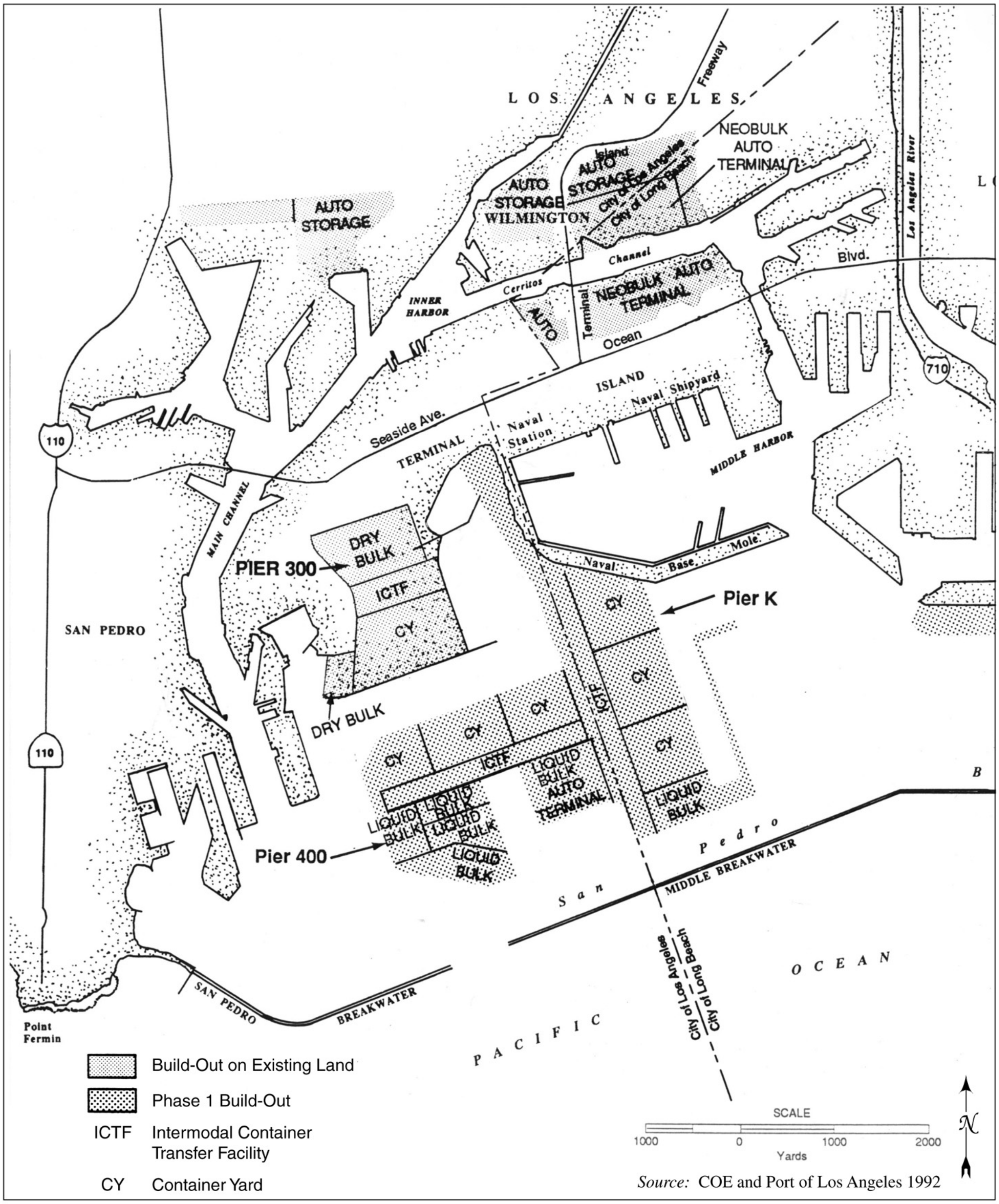


Figure 2-13. Proposed Project (Alternative B) for the 2020 Plan EIS/EIR

Feasible measures included new channel improvements to Pier 400 and continued use of tides to provide access for larger ships to existing terminals. The analysis in the Feasibility Study also examined the Project alternatives (USACE and LAHD 1992), and included a detailed alternatives assessment based on effectiveness, efficient fleet, landside facilities, safety, environment, efficiency, and completeness (USACE and LAHD 1992), as well as comparison of the recommended plan with the No Action Plan (USACE and LAHD 1992). "Plan H", which resulted in the present configuration of the Outer Los Angeles Harbor, was identified as the Recommended Plan and was assessed in the Deep Draft Navigation Project EIS/EIR, (USACE and LAHD 1992), which also included a discussion of alternatives considered. Plan H (i.e., the Deep Draft Navigation Project) was approved by the LAHD, a Record of Decision was signed by the federal government on January 21, 1994, and construction was completed.

The Recommended Plan included space on Pier 400 for relocation of certain existing liquid bulk terminals at the Port that were identified in the Port's Risk Management Plan as hazardous facilities and requiring relocation (LAHD 1983). Crude oil marine terminals are considered to be operations of a hazardous nature if their hazard footprint would overlap areas of substantial residential, recreational, or visitor populations; high-density working populations; and/or critical economic impact facilities. However, as noted in Section 1.1.1.2, there are no longer any facilities that qualify as requiring relocation under the Port's Risk Management Plan. The details of the facilities identified in the Risk Management Plan and the specific changes that removed the risk are provided in the alternatives discussion below. In the absence of a need to relocate these facilities, a large portion of the land on Pier 400 identified for this use has been allocated for container handling facilities instead of liquid bulk storage facilities.

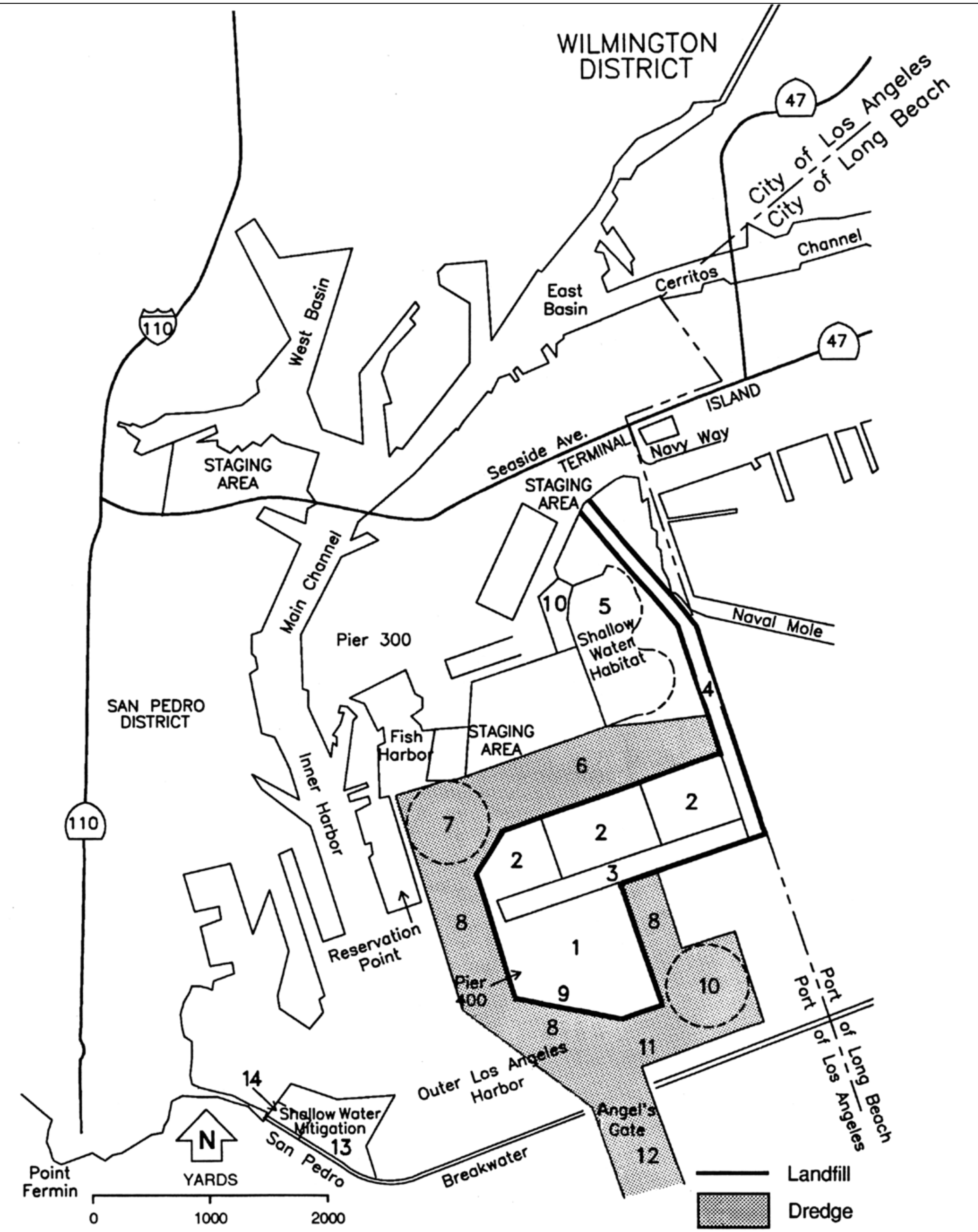
Development of the Pier 400 area for receipt and storage of crude oil resulted in a significant commitment of resources. The Recommended Plan, which used a 325,000 DWT tanker as the design vessel, identified a required channel depth of -81 feet MLLW that would extend from three miles (4.8 km) off-shore to the berth site on the West face of Pier 400 and to a turning basin outside of Fish Harbor (Figure 2-14). This proposed portion of the Pier 400 Project included the use of over 27 million cubic yards of dredge material from the channel deepening to create 337 acres of land at Pier 400, and construction of approximately 10,000 linear feet (3,100 m) of dikes to retain the dredge material.

A number of alternatives were examined in the Deep Draft FEIS/FEIR, ranging from use of other ports or existing landfill areas at the Port to alternative sizes and locations of proposed fills. That process led to the selection of Pier 400 in its present configuration for build out and use for container and liquid bulk terminals. The proposed Project examined in this subsequent document is a reasonable and logical realization of the planning process considered in the Deep Draft FEIS/FEIR. The Project would be located on Pier 400 in an area already examined in the Deep Draft FEIS/FEIR as compatible with this type of land use. Nonetheless, despite the screening process that was part of the Deep Draft document, all potential alternatives for location of this Project and/or use of the Pier 400 area are re-examined in this Supplemental EIS/Subsequent EIR as a matter of due diligence and to ensure that changing times and/or circumstances have not made one of those alternatives a more reasonable or equally viable alternative to the proposed Project.

LEGEND

1. Future Pier 400 marine terminal relocation site. Located furthest away from the other harbor facilities to maximize safety and minimize dredging of deep channels to acommodate Very Large Crude Carriers (VLCC). Dredging to existing terminals or to location closer to Pier 300 would produce more dredge material for disposal in the harbor or in the ocean.
2. Future Pier 400 container terminals designed to maximize handling efficiency by having adequate rectangular backland immediately adjacent to the berth to facilitate rapid loading and unloading of ships without the need to double handle containers. This reduces ship emissions (time in the harbor area) and reduces truck emissions.
3. Future shared near dock rail yard immediately adjacent to container facilities creates maximum efficiency of cargo handling and replaces truck traffic that would be required to more containers to the existing ICFT in the city of Carson or downtown Los Angeles rail yards. Such rail facilities are AQMP implementation measure 3.6.
4. Future access corridor to Pier 400 for use by truck and train traffic and pipelines/utilities. Corridor reduced to minimum width to avoid/minimize loss of harbor habitat. Portion in shallow portion will contain culverts to help with water circulation behind corridor; alternately a trestle will be constructed.

   The angle of the corridor away from the Naval Mole is needed to align corridor with Navy Way. Following the alignment of the Navy Mole would be on Navy property and would require a sharp left turn which is not possible for all rail traffic.
5. Existing shallow water habitat created when 190-acre portion of Pier 300 was constructed from Harbor Deepening Project in 1981-1983. Shallow area will be increased by 8 acres.
6. Channel area of very calm water needed for operation of container facilities.
7. Turning basin area to allow ships to be turned around and backed into marine oil terminals, dry bulk, and container berths.
8. Deep channel to allow access by largest liquid bulk vessels in fleet to reduce number of ship visits and increase navigation savings.
9. Angle of dike designed specially to absorb and deflect energy from storm waves entering through Angels Gate. This protects ships at berth around landfill and at Pier 300.
10. Turning basin area to allow ships to be turned around and backed into marine oil terminal berths per Coast Guard requirements.
11. South channel width design specially to strike a balance between width needed to allow safe two-way passage of vessels while minimizing problems for ships at berth. This includes two 250-foot transit lanes for recreational boaters on either side of channel.
12. Entrance channel outside breakwater needing dredging to allow safe entry by deep draft vessels.
13. Proposed San Pedro Breakwater shallow water habitat (-15 to -20 ft MLLW) to replace shallow areas degraded due to dredging or lost to construction of access corridor for feeding area of least terns. This area will also be available for unrestricted use by recreational boaters.
14. Rock boulder field area to be placed to enhance recreational fishing at Cabrillo Pier.



Source: USACE and LAHD 1992

Figure 2-14. Approved Pier 400 Project as Part of Deep Draft Navigational Improvements, Los Angeles and Long Beach Harbors, San Pedro Bay, California

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The number of alternatives investigated during the environmental process made it necessary to develop an objective process by which each alternative could be evaluated and compared with the proposed Project to determine if it should be moved forward for further co-equal analysis.

Information was gathered on each of the alternatives, as detailed in the sections below. Each project alternative was subjected to the following set of screening criteria, which are tied to the proposed Project's objectives.

- Would the alternative meet the primary Project objectives of efficiently accommodating vessels up to the size of VLCCs (see Section 2.3) and providing supporting infrastructure in order to accommodate a portion of the foreseeable crude oil volumes expected to enter the Port, while maximizing the use of deep-water facilities created for the purpose by the Deep-Draft Navigation Improvements Project and integrating into the Port's overall utilization of available shoreline?
- Would the alternative have significant impacts on air quality, health risk, in nearby communities, risk of upset (oil spills), safety issues related to navigation, biological resources or water quality?
- Would the alternative be feasible in terms of 1) compatibility with existing zoning, with the PMP and the use designations planned for incorporation into the revised PMP; 2) compatibility with the Port's risk management objectives; 3) availability for construction to begin in 2008; and 4) engineering and cost considerations?

2.5.2 Alternatives Evaluated in this Draft SEIS/SEIR

This document evaluates a reasonable range of alternatives to the proposed Project. The identification by the Port of a reasonable range of alternatives is informed by the legal mandates of the Port and the USACE. The Port is one of only five locations in the state identified in the Coastal Act (PRC Sections 30700 and 30701) for the purposes of international maritime commerce. These mandates identify the Port and its facilities as a primary economic/coastal resource of the State and an essential element of the national maritime industry for promotion of commerce, navigation, fisheries and operations of a harbor. Activities should be water dependent and give highest priority to navigation, shipping and necessary support, and access facilities to accommodate the demands of foreign and domestic waterborne commerce. Leaving the premises vacant for any extended time is not consistent with the legal mandates of the Port. Based on existing demand and capacity limitations on industrial Port uses and Trust purposes, all or most of the industrial facilities adjacent to deep water are needed to accommodate maritime commerce.

A wide array of alternatives to the proposed Project was examined in the preparation of this SEIS/SEIR in accordance with the screening criteria identified above. Three alternatives were selected to be carried forward for detailed analysis in this document: the proposed Project (Section 2.4) and the two alternatives described below.

2.5.2.1 No Federal Action/No Project Alternative

CEQA requires that the proposed Project be compared with a No Project Alternative. The No Project Alternative is not required to create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment. Rather, the No Project Alternative may project what would reasonably be expected to occur in the foreseeable future if the proposed Project were not approved, based on current plans and consistent with available infrastructure and community services.

In analyzing a proposed project in a joint CEQA/NEPA format, the USACE must distinguish the scientific and analytical basis for its decisions from the CEQA Lead Agency's decision. The USACE's baseline condition for determining significance of impacts, called the NEPA Baseline in this document, is primarily dependent on the "No Federal Action" condition (the NEPA Baseline is defined in Section 1.5.5.1). As explained in Section 1.5.5.1 and Section 2.6.1, for this document, the USACE, the LAHD, and the applicant have concluded that absent a USACE permit, it is not foreseeable that any element of the proposed Project would be implemented at the site. Therefore, for purposes of this document, the No Federal Action Alternative is equivalent to the No Project Alternative. Accordingly, both the No Federal Action Alternative and the No Project Alternative are referred to, jointly, as the No Federal Action/No Project Alternative.

The No Federal Action/No Project Alternative consists of the full range of construction and operational activities that are likely to occur without a permit from the USACE. The impacts of the No Federal Action/No Project Alternative under NEPA are evaluated by comparing them to the NEPA Baseline. Because the NEPA Baseline is equivalent to the No Federal Action/No Project Alternative for this project (Section 1.5.5.1 and Section 2.6.1), there will be no difference in environmental conditions and therefore no impacts in analyzing this alternative under NEPA.

As described in Section 1.1.1 and Section 2.3 regarding the proposed Project's objectives and purpose and need, the Pier 400 component of the proposed Project site, as a result of improvements undertaken pursuant to the Deep Draft Project, is suitable for use as a liquid bulk terminal. The Pier 300 site is also suitable for liquid bulk storage and has been considered for such use in the past. However, if neither the proposed Project nor the reduced-scale liquid bulk terminal alternative considered in this document were approved, it is not considered likely that another liquid bulk terminal project would be approved at the site in the foreseeable future, since there is no proposal to do so. Furthermore, any future proposal for liquid bulk storage would require a separate environmental document and discretionary permits from the USACE and the LAHD. Therefore, the No Federal Action/No Project Alternative analyzed in this document does not include construction or operation of a liquid bulk terminal at the site.

Under the PMP, Amendment Number 12, effective July 15, 1993, the only other allowable activity at Pier 400 is general cargo use (i.e., break-bulk, dry bulk, and containerized cargo). The No Federal Action/No Project Alternative does not, however, include construction and operation of an entirely new general cargo terminal, as the size and configuration of the proposed Project site are not adequate for that purpose. This is because the site is too small and poorly configured for any development project other than a liquid bulk terminal, and wave action at Pier 400 Faces C and D is too great to allow safe operation of vessels that must be unloaded with cranes (see Section 2.5.3.11 for details). Furthermore, in light of the depth of the adjacent channel, the preferred long-term use of that berth and supporting backlands is for very large vessels, such as those that are required for the receipt of petroleum crude.

Alternative Land Use Component. As a result of the considerations discussed above the No Federal Action/No Project Alternative in this SEIS/SEIR considers the only remaining allowable and reasonably foreseeable use of the proposed Project sites: the temporary storage of chassis-mounted containers on the site of Tank Farm Site 1 by APM, the operator of the adjacent container terminal on Pier 400, and on Tank Farm Site 2 by the APL Terminal at Pier 300 and the Evergreen Terminal farther to the west at Berths 226-236. Although it is possible that different uses of the proposed Project site (e.g., possibly including liquid bulk storage at either site) could be approved at some future date, such future approvals are not known or foreseeable at this time. Thus, to be conservative, this document describes the No Federal Action/No Project Alternative as consisting of container storage use from approximately 2012 through 2040 (i.e., through the entire proposed duration of the proposed Project). Of the range of reasonable options for a No Federal Action/No Project Alternative, this scenario has the least potential impacts for comparison with the proposed Project.

The storage of wheeled containers at the proposed Tank Farm Site 1 by APM would require some improvements on the site (e.g., paving, fencing, lighting, and installation of an access road), as shown on Figure 2-15. The storage of wheeled containers at Tank Farm Site 2 by APL and/or Evergreen would require similar improvements. Because all three potentially affected container terminals (i.e., Evergreen, APL, and APM) are constrained by available berth space (i.e., berth limited) rather than available backlands (personal communication, D. Walsh, 2007 and 2008), the temporary storage of wheeled containers would not result in increased throughput (i.e., vessel calls, train trips, and/or truck trips) at any of these terminals. Instead, APM, Evergreen, and/or APL would be able to operate somewhat more efficiently by converting a small portion of their container throughput to wheeled, rather than stacked, operation. Operation of the sites would involve the draying of chassis-mounted containers from the main container yards to the sites by cargo-handling equipment, and pick-up of the chassis by on-road trucks for delivery to destinations outside the harbor.

There could be more air emissions from these activities than occur at present, despite the increases in efficiency at the terminals that would use the sites. In the absence of an operational scenario, however, it is not possible to calculate those emissions. Including any such emissions could, moreover, artificially inflate the impacts of the No Project/No Federal Action Alternative. Accordingly, the analysis of the No Project/No Federal Action Alternative in this SEIS/SEIR does not take into account any increases in impacts resulting from use of the tank farm sites for container storage.

Crude Oil Import Component. In addition, for analysis purposes, this No Federal Action/No Project Alternative assumes that a portion of the increased demand for imports of crude oil in southern California (see Section 1.1.3 and Appendix D1) would be accommodated at existing liquid bulk terminals in the San Pedro Bay Ports, to the extent of their remaining capacities. As noted above, some of the crude oil would probably also be accommodated at other existing liquid bulk terminals in the region; however, as described below and in Tables 2-10 and 2-11, the crude oil would come in smaller vessels. Increased lightering could take place in coastal waters, would create

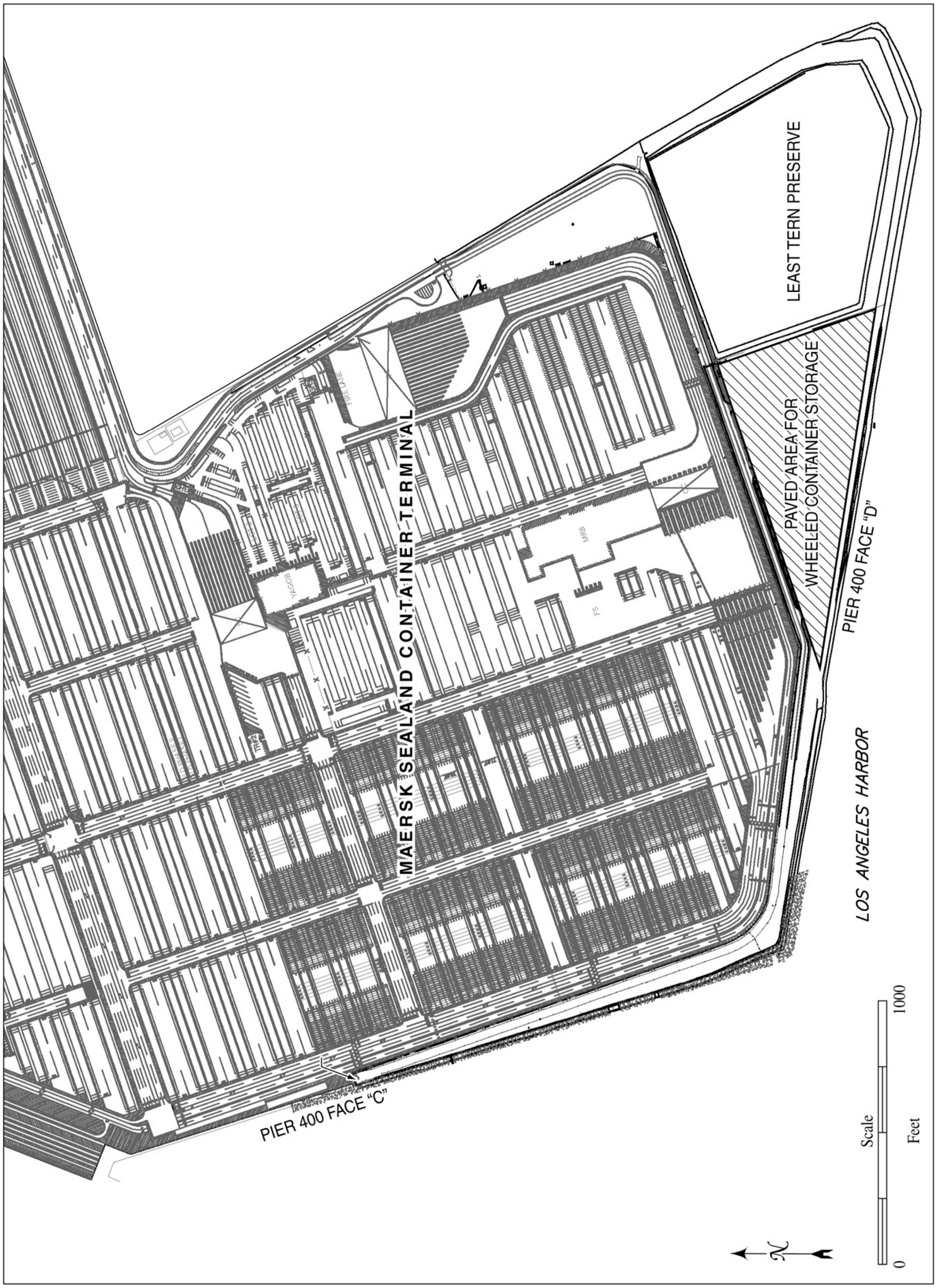

Figure 2-15. Temporary Container Terminal Storage at Pier 400 Under No Federal Action/No Project Alternative

Table 2-10. No Federal Action/No Project Alternative Throughput Comparison

Element	*Baseline (2004)*	*No Federal Action/No Project (2010)*	*No Federal Action/No Project (2015)*	*No Federal Action/No Project (2025)*	*No Federal Action/No Project (2040)*
New Marine Terminal Acreage	0	0	0	0	0
New Tank Farm Acreage	0	0	0	0	0
New Tanker Calls[1]	0	229 per year	267 per year	267 per year	267 per year
Average Crude Oil Throughput Above Baseline[2]	0	217,000 bpd	252,000 bpd	252,000 bpd	252,000 bpd
New Storage Tanks	0	0	0	0	0
Total New Tank Capacity	0	0	0	0	0
New Employees	0	10 [3]	52 [3]	12 [3]	12 [3]

Notes:

bpd = barrels per day

1. All tanker calls would be to existing terminals in the San Pedro Bay Ports.
2. In 2015 through 2040, incremental marine crude oil demand according to Baker & O'Brien (2007) exceeds the estimated available capacity of the existing crude oil berths in the Los Angeles area. However, rather than speculate about the specific method by which more crude oil or refined products would enter the area, for analysis purposes the impact assessment is based on imports up to the available capacity of existing crude oil berths.
3. The number of new employees includes those required for the increase in tugboat and Port pilot crews due to increased vessel calls at existing berths in the San Pedro Bay Ports. The number of new employees shown in 2015 also includes those associated with construction of the improvements at Tank Farm Site 1 and Tank Farm Site 2 to allow the intermittent and temporary storage of wheeled containers. The actual timeline for these improvements is not clear; the Port estimates they would occur within about five years, if the No Federal Action/No Project Alternative were implemented.

Table 2-11. Vessel Mix and Terminal Throughput under the No Federal Action/No Project Alternative (Compared to 2004 Baseline)[1]

	2010	*2015*	*2025*	*2040*
Panamax (light loaded – 300,000 bbl) to LAHD Berths 238-240	125	146	146	146
Aframax (light loaded – 400,000 bbl) to Port of Long Beach Berths 76-78	29	34	34	34
Aframax (light loaded – 400,000 bbl) to Port of Long Beach Berths 84-87	75	87	87	87
Suezmax	0	0	0	0
VLCC	0	0	0	0
Total vessel calls	229	267	267	267
Total crude oil throughput (bpd)	217,000	252,000	252,000	252,000

Notes:

bpd = barrels per day

bbl = barrels

1. All tanker calls would be to existing berths in the San Pedro Bay Ports. Note that in all years, incremental marine crude oil demand in all CEC demand scenarios exceeds the estimated available capacity of the existing crude oil berths in the Los Angeles area. However, rather than speculate about the specific method by which more crude oil or refined products would enter the area, for analysis purposes the impact assessment for the No Federal Action/No Project Alternative in this SEIS/SEIR is based on imports up to the available capacity of existing crude oil berths. Refer to Appendix D1 for detailed information.

increased air quality, risk of upset, water quality, and marine transportation impacts, but since the extent of such an activity is speculative, it is not possible to consider it quantitatively in this document.

As documented in Section 1.1.3, five marine terminals in the Los Angeles area presently offload crude oil: ExxonMobil (LAHD Berths 238-240), BP (Port of Long Beach Berths 76-78 and Port of Long Beach Berth 121), Tesoro (formerly Shell) (Port of Long Beach Berths 84-87), and Chevron (offshore mooring west of El Segundo). Based on research conducted by PLAMT and reviewed by the USACE and LAHD, only the terminals at Port of Long Beach Berths 76-78 and 84-87, and at LAHD Berths 238-240, had capacity to increase their crude oil throughput as of 2007 (Figure 2-16 shows the locations of these terminals). Port of Long Beach Berth 121 is limited to its current throughput by SCAQMD emissions caps; El Segundo is limited by its current infrastructure and by its SCAQMD permit.

The amount of excess capacity at LAHD Berths 238-240 and Port of Long Beach Berths 76-78 and 84-87 depends on berth limits on tanker size, channel depth, and the capacity of the pipeline and storage tank infrastructure to store and transport the crude oil to the refineries. (Note that since none of these terminals has expanded recently, they are not subject to SCAQMD emissions permits for operation because their current operations are grandfathered in.) Based on berth limits, channel depth, and an engineering analysis of pipeline and storage tank capacity, the LAHD and the USACE estimate the incremental capacity of the existing terminals (compared to crude oil receipts in 2004) at 252,000 bpd of crude oil, and that is the figure assumed as additional throughput to southern California under the No Federal Action/No Project Alternative (for the years in which estimated incremental crude oil demand is at least that amount). Appendix D1 provides additional supporting information and detailed sources for the assumptions used to derive this estimate.

The analysis of the No Federal Action/No Project Alternative assumes that the vessels delivering the additional 252,000 bpd would be the largest that could physically call at the existing berths; thus, this crude oil would be delivered by a mix of Panamax and Aframax vessels. Both types of vessels would have to arrive “light loaded”, i.e., only partially full, in order to have sufficiently shallow drafts to call at the existing berths, none of which have sufficiently deep water to accommodate fully-loaded tankers. All of the berths that have additional capacity currently operate in that mode.

It is reasonable to assume that refinery operators would attempt to preserve their assets by importing crude oil up to their capacity to process it, provided that it is profitable to do so, and to assume that distributors would attempt to import refined products if demand exceeds available supply from refineries. To the extent to which the demand exceeds capacity of marine facilities to import crude oil or refined products, additional imports of crude oil may come in by truck, rail, or barge (no pipelines transport crude oil into California, neither from neighboring states nor from Mexico), and additional refined products may come in by vessel, barge, truck, or rail (see Appendix D3 for details). However, rather than speculate about the specific method by which more crude oil or refined products would enter the area, for analysis purposes the impact assessment for the No Federal Action/No Project Alternative in this SEIS/SEIR assumes no discretionary actions by the LAHD, the Port of Long Beach, or other agencies, and is based on imports up to the available capacity of existing crude oil berths.

Under the No Federal Action/No Project Alternative, operation of the currently existing marine terminals, tank farms, and pipelines at LAHD and the Port of Long Beach would be the same as under current conditions except that, as described above and summarized in Table 2-11, more vessels would arrive at some existing terminals in the future.

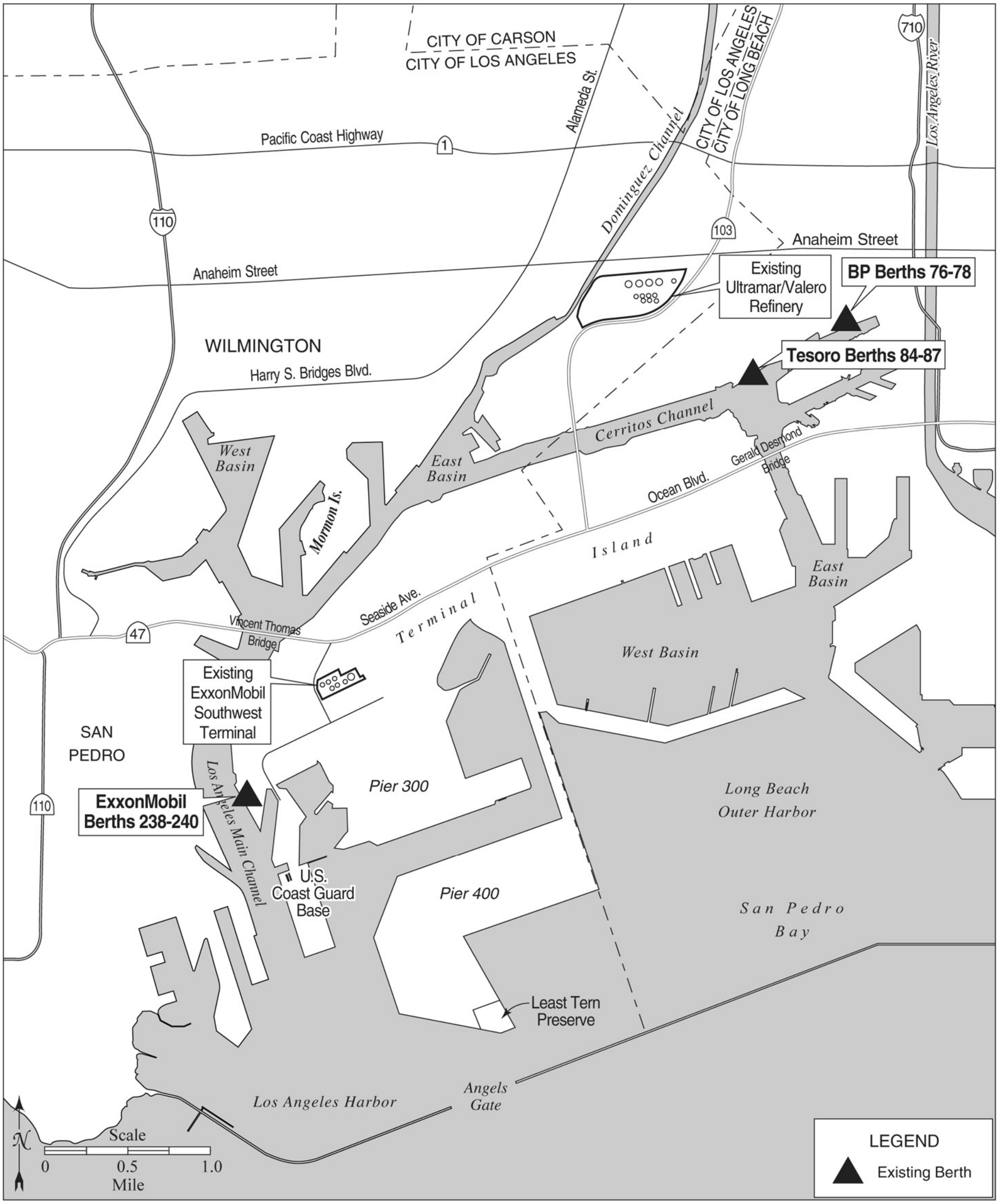

Figure 2-16. Existing Berths at San Pedro Bay Ports with Capacity to Receive Increased Crude Oil Deliveries

Tanker operations would be similar to the procedures described in Section 1.1.4 and Section 2.4.4.1. However, none of the currently existing terminals, with the exception of Port of Long Beach Berth 121, currently uses the same emissions control technologies as the proposed Project. In addition, none of the existing terminals complies with the MOTEMS. Note that the CSLC has characterized LAHD Berths 238-240, in particular among the currently existing crude oil berths at the San Pedro Bay Ports, as having components that do not meet current design standards or are aging and potentially deficient (CSLC 2007).

It is reasonably foreseeable that the currently existing terminals would eventually comply with the MOTEMS, that the LAHD and the Port of Long Beach would renew the operating leases for existing marine terminals, and that existing terminals would comply with CAAP measures as of the time of lease renewal (i.e., 2008 for Port of Long Beach Berths 84-87, 2015 for LAHD Berths 238-240, and 2023 for Port of Long Beach Berths 76-78). With respect to CAAP, the implementation of AMP at the currently existing berths would require construction similar to that described in Section 2.4.2.1 for the proposed Project. For MOTEMS, landside and in-water construction would likely be required to comply with seismic and safety standards. In both cases, the environmental impacts of this construction would vary based on the conditions at each existing terminal at the time that improvements are made. (However, note that of all the existing crude oil terminals at the San Pedro Bay Ports, only Port of Long Beach Berth 121 (and, if built, the proposed Project at Berth 408) would be required by SCAQMD to purchase ERCs as described in Section 2.4.4.5; other terminals are grandfathered until they require a Permit To Construct.)

Because the site-specific physical and design parameters of implementing the various CAAP and MOTEMS measures, including type, location, extent, and design of any improvements, are not known at this time, a detailed analysis of the construction impacts at existing terminals would be speculative and has not been conducted in this document. In addition, the projected increases in crude oil throughput under the No Federal Action/No Project Alternative are based on the current maximum physical and operational capacities of the respective existing marine terminals and associated infrastructure. Although the implementation of low-sulfur fuel requirements at existing terminals under CAAP would require deliveries of MGO to the existing terminals, uncertainty about the location of MGO storage facilities, means of transportation to those storage facilities, and quantity of MGO needed makes it speculative to assume a specific number or origin point for barge deliveries in this alternative.

2.5.2.2 Reduced Project Alternative

As described in Section 1.5.7, CEQA and NEPA require the lead agency to analyze a reasonable range of alternatives to the proposed Project that would avoid or lessen the environmental impacts while still attaining most of the objectives of the proposed project. One potential means for achieving that goal is to define an alternative that is smaller than the proposed Project, which can reduce impacts by having a smaller footprint or lower activity levels than the proposed Project. In the case of a crude oil terminal at Pier 400, building a facility with smaller footprint would not reduce impacts to any significant degree as there is a minimum size of berth and number of tanks necessary to support the importation of large quantities of crude oil. Accordingly, this document examines an alternative with a reduced activity level, defined as a lower throughput of crude oil.

The Reduced Project Alternative would be identical to the proposed Project in terms of the design, construction, and operation of the Marine Terminal, Tank Farm Sites 1 and 2, Pipeline Segments 1, 2a, 2b, 2c, 3, 4, and 5, and the new pigging station site (either Site A or, if Site A is unavailable, the alternate Site B). However, this alternative involves a lease condition imposed by LAHD that would cap permitted throughput of crude oil received at Berth 408. The lease would allow PLAMT to receive up to 127.75 million bbl in 2010 (average of 350,000 bpd) and up to 164.25 million bbl in 2015 through 2040 (average of 450,000 bpd). For intermediate years (2011-2014), the lease stipulation would allow an amount of throughput based on linear interpolation between the benchmark years.

Although the Reduced Project Alternative would entail a lower throughput volume than the proposed Project, the same amount of new tank storage is needed for several reasons. First is the size of the ships: Berth 408 in the Reduced Project Alternative would still accommodate VLCCs that can carry up to 2.3 million bbl of oil. Second, the variance in vessel arrival times would be similar to the proposed Project; vessels would arrive from a variety of producing regions, and uncertainty in transit time would require a certain amount of storage capacity. Third, the variety of types of crude oil that are being offloaded would be the same as in the proposed Project, again necessitating a number of different storage tanks in order to accommodate different crude types. Finally, just as for the proposed Project, the applicant would need the flexibility of multiple tanks for the same type of crude, even when tank capacities are not fully utilized, in order to track ownership by volume and maintain accurate crude oil custody records for its various customers.

Table 2-12 shows the throughput that would be allowed under the Reduced Project Alternative in various years and other key operating characteristics.

Table 2-12. Reduced Project Alternative Throughput Comparison

Element	*Baseline (2004)*	*Reduced Project Alternative (2010)*	*Reduced Project Alternative (2015)*	*Reduced Project Alternative (2025)*	*Reduced Project Alternative (2040)*
Marine Terminal Acreage	0	5.0 acres (2.0 ha)	5.0 acres (2.0 ha)	5.0 acres (2.0 ha)	5.0 acres (2.0 ha)
Total Tank Farm Acreage	0	47.7 acres (19.3 ha)	47.7 acres (19.3 ha)	47.7 acres (19.3 ha)	47.7 acres (19.3 ha)
Tanker Calls at Berth 408	0	129 per year[1]	132 per year[1]	132 per year[1]	132 per year[1]
Average Crude Oil Throughput at Berth 408	0	350,000 bpd	450,000 bpd	450,000 bpd	450,000 bpd
Barge Calls at Berth 408	0	6	8	8	8
Crude Oil Storage Tanks	0	16	16	16	16
Crude Oil Tank Capacity	0	4.0 million bbl	4.0 million bbl	4.0 million bbl	4.0 million bbl
Employees	0	523 peak [2]	48 [3]	60 [3]	61 [3]

Table 2-12. Reduced Project Alternative Throughput Comparison (continued)

Element	*Baseline (2004)*	*Reduced Project Alternative (2010)*	*Reduced Project Alternative (2015)*	*Reduced Project Alternative (2025)*	*Reduced Project Alternative (2040)*
New Tanker Calls at Existing Terminals in the San Pedro Bay Ports	0	0	0	209 per year[4]	240 per year[4]
Average New Crude Oil Throughput at Existing Terminals in the San Pedro Bay Ports	0	0	0	198,000 bpd	227,000 bpd

Notes:

bpd = barrels per day

bbl = barrels

1. The number of tanker calls at Berth 408 depends on crude oil supply sources and vessel availability; the estimate shown here is based upon projections of the world tanker fleet and terminal throughput from Baker & O'Brien (2007), and is the highest reasonably foreseeable number of tanker calls under the Reduced Project Alternative. See Appendix D1 for detailed calculations used to derive the estimate. These highest reasonably foreseeable numbers for the Reduced Project Alternative are assumed in the impact analysis in this SEIS/SEIR in order to capture all potential impacts of the Reduced Project Alternative. A higher proportion of large vessels carrying larger loads would mean fewer vessel calls per year. Note that an emissions cap would be imposed in the South Coast Air Quality Management District (SCAQMD) operating permit, as described in Section 3.2 Air Quality. The actual number of tanker calls per year would be limited to comply with the SCAQMD permit condition; however, this SEIS/SEIR does not incorporate this limitation (in order to capture all potential impacts of the Reduced Project Alternative).
2. The peak number shown represents peak employment during the construction phase (taking into account that operations would start in 2010 while construction is ongoing); see Section 2.4.3.1 for details. This peak level would occur for only a brief time period, if at all, but is the highest reasonably foreseeable number.
3. The number of employees during operation includes those employed or contracted by PLAMT as well as the estimated increase in tugboat and Port pilot crews due to increased vessel calls (including increased vessel calls at existing berths in the San Pedro Bay Ports). Employment is higher in later years because of higher number of vessel calls to the existing berths, which results in more tugboat and Port pilot crews, as well as the need for increased inspections and maintenance of the Reduced Project Alternative sites that starts five to ten years after the start of operations.
4. The number of tanker calls at existing terminals is an estimate based upon projections of the world tanker fleet and excess capacity at other existing terminals. See Appendix D1 for detailed calculations used to derive the estimate.

For analysis purposes, the number of vessel calls is based on prorating the number of vessel calls according to the reduced throughput that would be allowed by the lease (Table 2-13). As with the proposed Project, the actual number of vessel calls (as well as throughput) at Berth 408 could be lower than that used in the analysis.

Table 2-13. Vessel Mix and Terminal Throughput Under the Reduced Project Alternative

Vessel Type	*2010*	*2015*	*2025*	*2040*
VESSEL CALLS AND THROUGHPUT AT BERTH 408				
Panamax (350,000 bbl)	26	10	10	10
Aframax (700,000 bbl)	32	24	24	24
Suezmax (1,000,000 bbl)	45	52	52	52
VLCC (2,000,000 bbl)	26	46	46	46
Total tanker vessel calls	129	132	132	132
Total barge calls	6	8	8	8
Total crude oil throughput (bpd)	350,000	450,000	450,000	450,000

Table 2-13. Vessel Mix and Terminal Throughput Under the Reduced Project Alternative (continued)

Vessel Type	*2010*	*2015*	*2025*	*2040*
VESSEL CALLS AND THROUGHPUT AT EXISTING BERTHS IN THE SAN PEDRO BAY PORTS				
Panamax (light loaded – 300,000 bbl) to LAHD Berths 238-240	0	0	114	131
Aframax (light loaded – 400,000 bbl) to Port of Long Beach Berths 76-78	0	0	27	31
Aframax (light loaded – 400,000 bbl) to Port of Long Beach Berths 84-87	0	0	68	78
Total vessel calls	0	0	209	240
Total throughput (bpd)	0	0	198,000	227,000

Notes:

bpd = barrels per day

bbl = barrels

The number of tanker calls depends on crude oil supply sources and vessel availability; the estimate shown here is based upon projections of the world tanker fleet and terminal throughput from Baker & O'Brien (2007), and is the highest reasonably foreseeable number of tanker calls under the Reduced Project Alternative. See Appendix D1 for detailed calculations used to derive the estimate. These highest reasonably foreseeable numbers are assumed in the impact analysis in this SEIS/SEIR in order to capture all potential impacts of the proposed Project. A higher proportion of large vessels carrying larger loads would mean fewer vessel calls per year. Note that an emissions cap would be imposed in the South Coast Air Quality Management District (SCAQMD) operating permit, as described in Section 3.2 Air Quality. The actual number of tanker calls per year would be limited to comply with the SCAQMD permit condition as well as the lease stipulation imposed as a condition of the Reduced Project Alternative. (Note that this SEIS/SEIR does not incorporate the limitation imposed by the SCAQMD permit condition, so as to capture all potential impacts of the Reduced Project Alternative).

For analysis purposes, the Reduced Project Alternative also includes receipt of petroleum crude at other existing berths in the San Pedro Bay Ports with existing capacity. This assumption allows an analysis consistent with that of the proposed Project, which assumes that crude oil demand in the Los Angeles Basin will exceed the 450,000 bpd that would be permitted at Berth 408 under the lease cap associated with the Reduced Project Alternative. Since the analysis of the proposed Project assumes demand of 677,000 bpd in 2040, and the Port has no authority within the scope of this project to prohibit the import of crude oil through other berths in the San Pedro Bay Ports, it is reasonable to assume that demand in excess of 450,000 bpd in 2040 would arrive at other existing terminals to the extent those terminals have remaining capacity. In the intermediate years prior to 2040, the amount of crude oil assumed to be received at other existing terminals is estimated as the difference between the demand forecast from Baker & O'Brien (2007), incremental over 2004, and the permitted amount of throughput at Berth 408. For instance, in 2025 Baker & O'Brien (2007) predicts demand of 648,000 bpd, but the lease cap would permit only 450,000 bpd at Berth 408; the difference, 198,000 bpd, is assumed to arrive at existing terminals. In addition to the throughput that would be allowed at Berth 408, Table 2-13 shows the amounts that are assumed to arrive at other existing terminals in 2010, 2015, 2025, and 2040. Appendix D1 shows the throughput that would be allowed for each year between 2010 and 2040 at Berth 408 and at existing terminals, and describes in detail how those figures were arrived at.

Under the Reduced Project Alternative, operation of the currently existing marine terminals, tank farms, and pipelines at the San Pedro Bay Ports would be the same as under current conditions except that, as described above and summarized in Table 2-13, more vessels would arrive at some existing terminals in the future. Tanker operations would be similar to the procedures described in Section 1.1.4 and Section 2.4.4.1. However, none of the currently existing terminals, with the exception of Port of Long Beach Berth 121, currently uses the same emissions control technologies as the proposed Project. In addition, none of the existing terminals complies with the MOTEMS. Note that the CSLC has characterized LAHD Berths 238-240, in particular among the currently existing crude oil berths at the San Pedro Bay Ports, as having components that do not meet current design standards or are aging and potentially deficient (CSLC 2007).

It is reasonably foreseeable that the currently existing terminals would eventually comply with the MOTEMS, that the LAHD and the Port of Long Beach would renew the operating leases for existing marine terminals, and that existing terminals would comply with CAAP measures as of the time of lease renewal (i.e., 2008 for Port of Long Beach Berths 84-87, 2015 for LAHD Berths 238-240, and 2023 for Port of Long Beach Berths 76-78). With respect to CAAP, the implementation of AMP at the currently existing berths would require construction similar to that described in Section 2.4.2.1 for the proposed Project. For MOTEMS, landside and in-water construction would likely be required to comply with seismic and safety standards. In both cases, the environmental impacts of this construction would vary based on the conditions at each existing terminal at the time that improvements are made. (However, note that of all the existing crude oil terminals at the San Pedro Bay Ports, only Port of Long Beach Berth 121 (and, if built, Berth 408) is required by SCAQMD to purchase ERCs as described in Section 2.4.4.5; other terminals are grandfathered until they require a Permit To Construct.)

Because the site-specific physical and design parameters of implementing the various CAAP and MOTEMS measures, including type, location, extent, and design of any improvements, is not known at this time, a detailed analysis of the construction impacts at existing terminals would be speculative and has not been conducted in this document. In addition, the projected increases in throughput for currently existing terminals under the Reduced Project Alternative are based on the current maximum physical and operational capacities of the respective existing marine terminals and associated infrastructure.

2.5.3 Alternatives Considered and Withdrawn

A number of other alternatives for handling up to 677,000 bpd of crude and partially refined crude oil were considered to identify opportunities for avoiding the impacts associated with construction and operation of the proposed Project. However, all were eliminated from further consideration. Those alternatives are: (1) expansion of other crude oil terminals inside the Port; (2) use of an existing berth(s) within the Port; (3) development of a new landfill and/or terminal inside the Port; (4) expansion or construction of a terminal outside the Port; (5) use of an offshore mooring site (monobuoy); (6) shipping to the Bay Area and pipelining to southern California; (7) constraining the size of vessels that could call at Berth 408; and (8) alternative storage tank locations. These categories include the alternatives that were considered in the 1992 Deep Draft FEIS/FEIR (USACE and LAHD 1992):

- use of other west coast ports;
- use of the Port of Long Beach;

- optimization of facilities within the Port of Los Angeles;
- expansion inland;
- monobuoys;
- landfill outside of the breakwater; and
- several alternative landfill configurations.

In addition, several alternatives were considered for alternative uses of the Pier 400 site. Those alternatives are: (9) a non-shipping use of the Pier 400 area; (10) relocation of existing liquid bulk terminals to Pier 400; (11) building a new container terminal on Pier 400; and (12) building a liquid bulk terminal on Pier 400 for refined products, instead of crude oil (either petroleum-based products or alternative fuels such as ethanol); and (13) developing renewable energy resources on the project sites.

Alternatives were rejected on the basis of the three screening criteria described at the end of Section 2.5.1: (1) failure to meet most Project objectives; (2) inability to avoid the Project's significant environmental and public health impacts, inability to reduce the risk of upset or navigational hazards, or creation of greater impacts; and (3) infeasibility, based on cost, technology, legal, institutional, or other factors. The second of these reasons is often the most difficult to assess because there may be significant impacts associated with different resource areas for each of the alternatives. The alternatives that were dismissed from further consideration and the reasons for their rejection are discussed below.

2.5.3.1 Expansion of Other Crude Oil Terminals Within the Port of Los Angeles

Using an existing crude oil terminal could, if feasible, avoid some of the environmental impacts and fiscal expenditures associated with building a new terminal on vacant land. Accordingly, LAHD considered several options for expansion of other crude oil terminals within the Port. Currently there is only one crude oil terminal within the Port that imports crude oil: ExxonMobil at Berths 238-240. Berths 45-47 were previously used to import crude oil but the terminal is vacant and the berths are currently used as lay berths pending re-development of the site. Both of these berth areas are shown in Figure 2-17.

Project Description. This alternative would consist of developing either or both sites into marine terminals capable of handling tanker vessels up to the size of VLCCs with landside infrastructure capable of handling the cargo from such vessels and transporting that cargo to area tank farms and refineries. Both sites would require extensive dredging and wharf reconstruction to accommodate the larger vessels:

Berths 47-49 has 52 feet (15.8 m) of water at MLLW and Berths 238-240 has only 37 feet (11.3 m) of water. Accordingly, both sites would need to be dredged to approximately -81 ft (-24.7 m) to safely accommodate Suezmax vessels and VLCCs, the largest of which draw up to 75 ft (23 m) of water (Table 1-1).

Additional tankage would need to be constructed in other areas of the harbor (probably at the Tank Farm 2 site on Terminal Island) to accommodate the vessel cargos, as neither

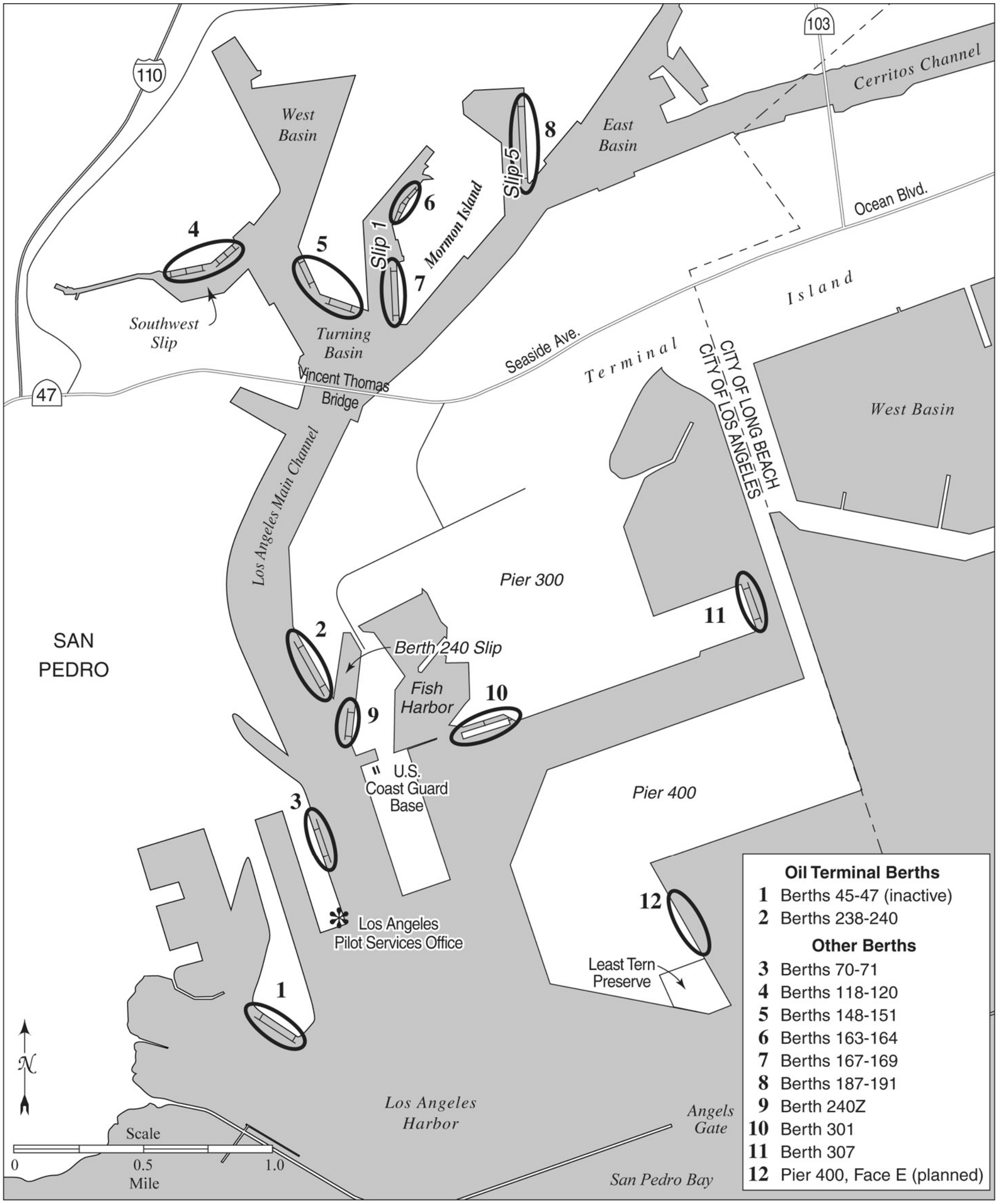

Figure 2-17. Alternative Berth Locations Considered and Eliminated

site currently has 4.0 million bbl of capacity: Berths 47-49 have no storage capacity and Berths 238-240 have 2.3 million bbl of storage. In addition, assuming Tank Farm Site 2 is used for the additional storage capacity, a 42-inch pipeline would have to be built to connect the marine terminal to the site; in the case of Berths 45-47 that pipeline would have to go under the Main Channel.

Analysis. This alternative appears to be infeasible on the basis of institutional factors. First, the use of either site for a marine oil terminal would be inconsistent with Section V, subsection F of the PMP (LAHD 2006). This section states:

The Master Plan's long range preferred uses provide for the relocation of liquid and dry bulk cargo facilities, particularly those of a hazardous nature, to Area 9 when adequate land, deepwater access and surface transportation facilities are available.

Crude oil marine terminals are considered to be operations of a hazardous nature if their hazard footprint would overlap areas of substantial residential, recreational, or visitor populations; high-density working populations; and/or critical economic impact facilities. Berths 238-240 are in Planning Area 7 (Terminal Island/Main Channel), while Berths 45-47 are in Planning Area 2 (West Bank). Both terminal areas are located closer to the populated communities of San Pedro and Wilmington than is Pier 400 (Planning Area 9). Second, the current lease at Berths 238-240 does not expire until 2015, which would seriously delay implementation of the project. The Berths 45-47 site is currently vacant, is part of the Port's San Pedro Waterfront redevelopment area, and is presently being considered as the site for a potential cruise terminal. Furthermore, it is the intent of the Port to remove heavy industrial uses from the San Pedro Waterfront.

The alternative would also have, overall, greater environmental impacts than the proposed Project in several resource areas. Although the additional tankage would result in land-use, construction, and operational impacts similar to those of the proposed Project, the emissions from the tanks already on site could be greater than those of the proposed Project since the older tanks might not be equipped with BACT, and those emissions would occur closer to populated areas. Dredging and associated sediment disposal would have impacts on air quality (e.g., due to emissions from dredging equipment) water quality (e.g., due to increased turbidity), biological resources (e.g., due to increased turbidity and disruption of biological communities), and marine transportation (e.g., due to the presence of dredging and support vessels). Air emissions from the tanker vessels and tugboats would be greater than with the proposed Project because of longer transit time to berths more distant from the harbor entrance. Those emissions would occur closer to residential and visitor-serving areas, so that use of the existing terminals would have a greater public health impact than the proposed Project.

The use of the existing terminals would, overall, have a similar level of biological impacts as the proposed Project. However, dredging for channel and berth deepening would cause a number of biological impacts that would not occur at the proposed deepwater Berth 408 site, which would require no dredging.

Use of Berths 238-240 would result in vessel traffic conflicts in the Port Main Channel due to the greater width (beam) of the larger vessels while at berth (the site is on a narrow portion of the Main Channel). These impacts were issues of specific concern that were to be avoided in the Deep Draft FEIS/FEIR selection of alternatives (USACE and LAHD 1992). The use of Berths 45-47 would not cause such vessel traffic conflicts but it would have adverse impacts on recreational boating and coastal recreation in the Cabrillo Beach/Cabrillo Marina areas.

Therefore, for reasons of increased environmental impact and incompatibility with long-range land-use planning goals, this alternative was eliminated from further consideration.

2.5.3.2 Use of Existing/Planned Berth(s) Within the Port of Los Angeles

Some of the advantages of using an existing crude oil berth instead of building a new terminal, i.e., avoiding some construction impacts, could potentially be realized by converting existing berths to crude oil operations. This could be especially true of existing liquid bulk terminals because some of the necessary infrastructure (tanks, pipelines, tanker berthing facilities) might already be in place. Accordingly, several potential opportunities were considered for developing a new crude oil marine terminal at existing berths within the Port that have not previously supported crude oil operations (numbers 3 through 11 on Figure 2-17). One planned berth, on Face E of Pier 400, was also analyzed (number 12 on Figure 2-17). All of these berths are assumed to meet the project objective of accommodating VLCCs and the facilities needed to handle the future demand for imported crude oil if the necessary modifications and operating requirements are institutionally and technically feasible. The current physical condition of a berth was not held to be, in itself, a criterion for rejecting an alternative if the berth could reasonably be modified to accommodate VLCCs, provide the associated landside storage and transport facilities, and comply with MOTEMS structural and operational requirements (most have been grandfathered in for their existing uses and are not compliant with standards for large-volume crude oil operations). It is important to note, however, that every one of the existing berths would involve more construction than the proposed Project in order to provide a facility capable of handling VLCCs and large volumes of crude oil.

2.5.3.2.1 Berths 70-71

The Berths 70-71 terminal (Number 3 on Figure 2-17), until 2007 occupied by Westway Terminal, is now part of the San Pedro Waterfront redevelopment and is proposed as the site of a marine sciences research center. It accommodates a low-volume liquid bulk operation (primarily chemicals), and has a small (approximately 12-acre) tank farm and pipelines. The waterfront is approximately 1,700 feet (515 m) long.

Project Description. Conversion of Berths 70-71 to a crude oil terminal would require 1) rebuilding the wharf to meet modern design standards for marine oil terminals; 2) extensive dredging to deepen the berth and approximately 5,600 feet of the Main Channel up to the berth to -81 ft MLLW (the berth’s depth is currently 45 feet MLLW); 3) construction of approximately 4 million bbl of tankage at Tank Farm 2 (the existing terminal has negligible tankage by crude oil standards); 4) construction of large pipelines, including one under the Main Channel to connect to Tank Farm 2; and 5) clean up of the existing soil contamination.

Analysis. This alternative appears to be infeasible on the basis of institutional factors. First, the use of the site for a marine oil terminal would be inconsistent with Section V, subsection F of the PMP (LAHD 2006), as described for the previous alternative (Section 2.5.3.1). Berths 70-71 are in Planning Area 2 (West Bank), and its hazard footprint would likely overlap visitor-serving and residential areas. Second, the alternative would pose greater engineering challenges to construct a deep-water berth (the shoreline is not designed for water 81 feet deep immediately alongside) and pipeline crossing, and correspondingly greater costs than the proposed Project. Third, Westway's lease on the site has recently been terminated by the Port and the facility will be decommissioned in order to allow future uses consistent with plans for the San Pedro Waterfront redevelopment.

The alternative would also have, overall, greater environmental impacts than the proposed Project in several resource areas. The dredging and associated sediment disposal needed for channel and berth deepening would have substantial impacts on air quality (e.g., due to emissions from dredging equipment) water quality (e.g., due to increased turbidity), biological resources (e.g., due to increased turbidity and disruption of biological communities), and marine transportation (e.g., due to the presence of dredging and support vessels). If the dredging were not undertaken, the terminal would have to operate by accepting only light-loaded Panamax and Aframax vessels, and since there is room for only one vessel at the berths it would not be able to achieve the necessary throughput.

The use of Berths 70-71 would, overall, have a similar level of biological impacts as the proposed Project. However, dredging for channel and berth deepening would cause a number of biological impacts that would not occur at the proposed deepwater Berth 408 site, which would require no dredging.

The location of Berths 70-71 close to the community means that construction noise impacts, and construction and operation phase impacts related to visual quality, air quality, and proximity of hazardous materials, would be greater than for the proposed Project. Construction-related air and water quality impacts would probably be no greater than those of the proposed Project. The location of Berths 70-71 on the narrow portion of the Main Channel would pose more potential navigational hazards than the proposed Project (although the proposed Project is immediately adjacent to the Main Channel, the Main Channel is much wider in the vicinity of the proposed Project). These impacts were issues of specific concern that were to be avoided in the Deep Draft FEIS/FEIR selection of alternatives (USACE and LAHD 1992).

2.5.3.2.2 Berths 118-120

The Berths 118-120 site (Number 4 on Figure 2-17) in the West Basin of Los Angeles Harbor is currently utilized by Kinder-Morgan, which handles only refined petroleum products, not crude oil. The site includes an approximately 12-acre (5 ha.) tank farm with 500,000 bbl of tankage and an 825-ft (250 m)-long wharf with a water depth of 35 ft (10.7 m) MLLW. The Port's long-term plan for the site is to relocate the operations of this terminal within the harbor, decommission the facility, and use the land for container terminal operations.

Project Description. Redeveloping this site as a crude oil terminal capable of handling VLCCs would require the following project elements: 1) the entire Main Channel up into the West Basin and Southwest Slip would need to be dredged to -81 ft (-24.7 m) MLLW, and the dredged material disposed of at an as-yet unknown location; 2) the shoreline would need to be rebuilt and a modern marine terminal berthing structure constructed; 3), additional tankage and pipelines would need to be constructed, possibly including a 42-inch pipeline under the Main Channel to connect the terminal to Tank Farm 2; and 4) the existing liquid bulk terminal facilities would need to be demolished.

Analysis. There are several institutional and engineering constraints associated with this alternative that make it infeasible. First, the site would not be available in time to implement the project: Kinder-Morgan's lease does not expire until 2013. Second, the alternative would pose greater engineering challenges to construct a deep-water berth (the shoreline is not designed for water 81 feet (24.7 m) deep immediately alongside) and pipeline crossing, and correspondingly greater costs than the proposed Project. Third, the West Basin is not suitable for maneuvering VLCCs into the narrow confines of Berth 118-120. The size of the nearby turning basin would be insufficient to accommodate turning of the VLCCs even if dredging provided a sufficient water depth at the berth, and the berth itself is not long enough to accommodate a vessel more than 1,000 feet (305 m) long. Accordingly, it does not appear to be physically possible to operate the facility as a crude oil terminal capable of accommodating large tankers.

The use of Berths 118-120 would, overall, result in greater environmental impacts than the proposed Project. The location far up the Main Channel in a corner of the West Basin would result in substantially greater air quality, risk of upset, and navigation hazards than the proposed Project. The site is close to the communities of San Pedro and Wilmington, resulting in greater health risks and aesthetic impacts to those communities than the proposed Project. Dredging and associated sediment disposal would have substantial impacts on air quality (e.g., due to emissions from dredging equipment) water quality (e.g., due to increased turbidity), biological resources (e.g., due to increased turbidity and disruption of biological communities), and marine transportation (e.g., due to the presence of dredging and support vessels). The site would have an adverse impact on benthic communities in the Main Channel and West Basin as a result of the dredging.

2.5.3.2.3 Berths 148-151

Berths 148-151 (Number 5 on Figure 2-17) in the West Basin are currently leased to ConocoPhillips/TOSCO, which handles petroleum products, lube oils, blendstocks, and refinery feedstocks on a 30-day lease basis through the 13-ac (5.3-ha.) site that includes a tank farm with 825,000 bbl of storage capacity. The berth depth at this location is 37 ft (11.3 m) MLLW and the waterfront is approximately 1,300 feet (400 m) long.

Project Description. Conversion of the site to a crude oil terminal capable of accommodating VLCCs and handling up to 677,000 bpd of crude oil would require the same modifications described for the Berths 118-120 site, except that the Southwest Slip would not need to be deepened.

Analysis. All of the factors described above for the Berths 118-120 site would apply to the Berths 148-151 terminal, with three exceptions. First, the site is not encumbered by a long-term lease and would therefore be available to meet the project schedule. Second, the site is not being proposed for redevelopment into a container terminal, so there would be no land-use conflict. However, berthing VLCCs at the entrance to the West Basin would cause serious navigational conflicts because of the need for access to the

West Basin container terminal (TraPac [Berths 136-147] and West Basin Container Terminal [Berths 121-131]) by large container vessels and the proposed berthing of container ships on the other side of the entrance (China Shipping [Berths 97-109] container terminal).

2.5.3.2.4 Berths 163-164

Berths 163-164 (Number 6 on Figure 2-17) in Slip 1 are currently leased by Ultramar (Valero); the lease expired in 2002, but Ultramar continues to operate the terminal in a holdover status under a month-to-month extension agreement. Ultramar is currently seeking to renew the lease for a 10-year period plus a 10-year renewal option and would also upgrade the marine terminal facilities in compliance with recent requirements. Ultramar handles refined petroleum products on about 10 acres including about 1.55 million bbl of storage capacity. The berth depth at this location is 35 ft (10.7 m) MLLW and the length of the waterfront is approximately 900 feet (275 m).

Analysis. All of the factors described above for the Berths 118-120 site would apply to Berths 163-164 with three exceptions. First, the site is not encumbered by a long-term lease and could, therefore, be available to meet the project schedule. Second, the site is not being proposed for redevelopment into a container terminal, so there would be no land-use conflict. However, berthing VLCCs would be impossible due to the narrow width of the channel, which is approximately 300 feet at Berth 163.

2.5.3.2.5 Berths 167-169

Berths 167-169 (Number 7 on Figure 2-17) in Slip 1 are currently leased by Tesoro; the lease does not expire until 2023. Tesoro handles refined petroleum products through a 9 ac. (3.7 ha.) tank farm. The berth depth at this location is 40 ft (12 m) MLLW and the length of the waterfront is approximately 1,200 feet (365 m).

Project Description. Conversion of the site to a crude oil terminal capable of accommodating VLCCs and handling up to 677,000 bpd of crude oil would require the same modifications described for the Berths 118-120 site except that Slip 1, instead of the Southwest Slip, would have to be deepened.

Analysis. All of the factors described above for the Berths 118-120 site would apply to Berths 167-169 with two exceptions. First, the site is not being proposed for redevelopment into a container terminal. In addition, berthing VLCCs at the entrance to Slip 1 would cause serious navigational conflicts because the vessel would occupy half of the channel width of 600 feet, thus barring access to the rest of Slip 1 by all but the smallest vessels.

2.5.3.2.6 Berths 187-191

The Berths 187-191 site (Number 8 on Figure 2-17) in Slip No. 5 is currently leased by Vopak, whose lease does not expire until 2023. Vopak handles chemicals and refined petroleum products through a 37-ac (10.3 ha.) site that has on-site tankage with a total capacity of approximately 700,000 bbl. The berth depth at this location is 38-feet (11.6 m) MLLW and the wharf is approximately 2,300 feet (700 m) long.

Project Description. Conversion of the site to a crude oil terminal capable of accommodating VLCCs and handling up to 677,000 bpd would require the same modifications described for the Berths 118-120 site except that Slip 5, instead of the Southwest Slip, would have to be deepened, and Main Channel deepening would extend all the way to the East Basin.

Analysis. All of the factors described above for the Berths 118-120 site would apply to Berths 187-191 with two exceptions. First, the site is not being proposed for redevelopment into a container terminal. In addition, berthing VLCCs at the entrance to Slip 5 would cause serious navigational conflicts because the vessel would occupy more than half of the channel width of 500 feet (152 m), thus barring vessel access to the rest of Slip 5 and prohibiting the use of Berths 177-179 (Pasha) across the channel.

2.5.3.2.7 Berth 240Z

Berth 240Z (Number 9 on Figure 2-17) was previously occupied by Southwest Marine, a ship repair facility whose lease was terminated in 2004. It has never been used for liquid bulk operations. The backland area of this site includes approximately 15 acres (6 ha) of parking lot, part of which is under short-term lease to several lessees; warehouses and sheds; and a historic structure. The water depth at this berth is 32 ft (9.8 m) MLLW. The Port’s plans for this area include filling the slips and using the resultant land and existing backland for fishing industry relocation, marine fueling facilities, and miscellaneous maritime uses (e.g., ship services).

Project Description. Conversion of the site to a crude oil terminal capable of accommodating VLCCs and handling up to 677,000 bpd of crude oil would require most of the same modifications described for the Berths 118-120 site with two exceptions. First, the Berth 240 Slip, not the Southwest Slip and West Basin, would need to be deepened. Second, no Main Channel pipeline crossing would be needed, as the berth could be connected to Tank Farm Site 2 via an underground pipeline on Terminal Island.

Analysis. All of the factors described above for the Berths 118-120 site would apply to Berth 240Z. Given the presence of historic structures, it is uncertain whether this site could accommodate the surge and storage tanks of Tank Farm Site 1. The location of this berth on a narrow portion of the Main Channel (the tanker at berth would protrude into the channel) would increase risk of upset and navigational impacts. Overall, however, impacts on several resources (visual resources, risk of upset, water quality, waters of the U.S., air quality, health risk, land use/neighborhood environmental quality, and navigation hazards) would be greater than for the proposed Project. Finally, the Port’s plans are to use this site for other uses/needs that are compatible with its location and physical layout.

2.5.3.2.8 Berth 301

Berth 301 (Number 10 on Figure 2-17) on the southern edge of Pier 300 was until recently occupied by LAXT, but is now vacant. The water depth at this berth is 67 ft (20 m) MLLW, and the existing wharf structure waterfront is approximately 1,000 feet (305 m) long. There are approximately five acres (two ha.) of the backlands adjacent to the waterfront. The Port’s long-term plans for this location are to convert it to container operations, possibly including a wharf to accommodate container vessels.

Project Description. Conversion of the site to a crude oil terminal capable of accommodating VLCCs and handling up to 677,000 bpd of crude oil would require a number of elements. First, the berth and the approaches to the berth would be dredged to -81 ft (24.7 m) MLLW from the current depth of -52 ft (16 m) MLLW. Second, the existing wharf would need to be demolished and a new berthing structure would be constructed, and Tank Farm 1 would be built on the adjacent backlands. Third, Tank Farm 2 would be built as in the proposed Project and connected to Tank Farm 1 by a 42-inch pipeline trenched along Earle Street and Terminal Way. All other pipelines would be as in the proposed Project.

Analysis. The site would not eliminate any of the environmental impacts associated with the proposed Project. Dredging and associated sediment disposal would have impacts on air quality (e.g., due to emissions from dredging equipment) water quality (e.g., due to increased turbidity), biological resources (e.g., due to increased turbidity and disruption of biological communities), and marine transportation (e.g., due to the presence of dredging and support vessels). There could also be impacts related to navigational safety because of the close maneuvering required to berth VLCCs at that site.

2.5.3.2.9 Berth 307

Berth 307 (Number 11 on Figure 2-17) was very recently created by a fill at the southeastern end of Pier 300. The 40-acre (16 ha.) fill is currently vacant and under development. The area is expected to be occupied by APL, which has the first right of refusal for this parcel, and used for container terminal backlands.

Project Description. This alternative would consist of building all of the elements of the proposed Project at Berth 307, deepening the berth to -81 ft (24.7 m) MLLW from its current depth of -55 ft (-17 m) MLLW, and dredging the Pier 300 Channel between Piers 300 and 400 to a depth of -81 ft (-24.7 m) MLLW from its current depth of -52 ft (-16 m) MLLW.

Analysis. This alternative has significant disadvantages relative to the proposed Project. Dredging and associated sediment disposal would have substantial impacts on air quality (e.g., due to emissions from dredging equipment), water quality (e.g., due to increased turbidity), biological resources (e.g., due to increased turbidity and disruption of biological communities), and marine transportation (e.g., due to the presence of dredging and support vessels). Most important, navigational issues make this alternative infeasible. The Port Pilots (personal communication with Captain Jim Morgan, Port Pilot, 2005) have identified issues that prevent the use of this berth by VLCCs. First, the East Channel lacks sufficient turning radius for the VLCCs, so that VLCCs could not be maneuvered into the berth. Second, the need to transit through a channel already busy with traffic from two container terminals poses serious navigational hazards.

2.5.3.2.10 Pier 400, Face E

The east side of Pier 400, called Face E (Number 12 on Figure 2-17), is currently vacant and is located immediately north of the least tern nesting site. Water depth alongside the shore is -69 ft (-21 m) MLLW, and the waterfront is approximately 1,300 feet (400 m) long. The backlands area is a narrow, 6-ac (2.5 ha), triangular strip of land bordered by the APL terminal gate on the west and the least tern nesting site on the south.

Project Description. Construction of a marine oil terminal at this location would be identical to construction of the proposed Project with the exceptions that the pipeline to Tank Farm Site 2 would be somewhat shorter and the approach channel and berth would have to be dredged to -81 ft (-24.7 m) MLLW in order to accommodate a fully loaded VLCC.

Analysis. This alternative has the same institutional issues as the proposed Project, meaning that it is immediately available and is consistent with Pier 400's designated uses and plans for liquid bulk facilities. Its disadvantages include the additional cost and environmental impact associated with the required dredging and sediment disposal. In addition, due to the angle between Pier 400 and the Federal Breakwater, it would be difficult for a VLCC to access Face E without a number of turns. These turns would slow the vessel's approach, thereby potentially limiting recreational access of the area (due to the number of vessel turns in a rather small area) and increase emissions from the increased number of vessel moves.

From an environmental perspective, its advantages are that it is a few hundred feet farther away from the community than the proposed Project and it is shielded from community views by the existing APM terminal. Its disadvantages are the increased environmental impacts associated with dredging and sediment disposal, as well as those associated with operations. Dredging and associated sediment disposal would have substantial impacts on air quality (e.g., due to emissions from dredging equipment) water quality (e.g., due to increased turbidity), biological resources (e.g., due to increased turbidity and disruption of biological communities), and marine transportation (e.g., due to the presence of dredging and support vessels). Tanker and tugboat activity in the waters adjacent to the nesting site could adversely affect least tern foraging success, as monitoring studies have shown that the terns do feed in those waters (Keane Biological Consulting 2005). Because this site is immediately adjacent to the least tern nesting site, a tanker upset or spill could have significant impacts on the least terns. The relatively minor advantages over the proposed Project are outweighed by the greater environmental impacts, and this alternative was rejected from further consideration.

In summary, none of these berths in its present condition would allow the Project to meet its objectives because none would allow berthing of fully-loaded VLCCs (drafts of up to 76 ft (23 m)). All would require extensive dredging, sediment disposal, and wharf construction, and none could accommodate tankage and pipelines capable of supporting the volumes of crude oil required to meet the project objectives. All of the sites have significant disadvantages relative to the proposed Project. All but one of the sites is closer to residential neighborhoods than the Berth 408 site. The construction-related impacts of developing new crude oil facilities at any of these sites would be substantially greater than the impacts of construction at the Berth 408 site, given the amount of dredging that would be required. Operational impacts at all of the sites would be either equal to or, in most cases, greater than those at the Berth 408 site because of their greater transit distances, public health effects, proximity to the community, and navigational safety issues. All but one would be inconsistent with federal and local planning efforts to locate new oil facilities on Pier 400, pursuant to one of the major purposes of creating Pier 400 and the deep water next to it. For these reasons, all of the potential existing berth sites were eliminated from further consideration.

2.5.3.3 Development of a Terminal on a New Landfill Inside the Port

Locating a new terminal as far away from residential areas as possible would offer an opportunity to reduce potential health risks to the port community. Accordingly, an alternative in which the Port would construct a new terminal on created land elsewhere in the harbor, rather than using the existing land on Pier 400 was considered.

Project Description. Construction would involve all of the elements of the proposed Project with the addition of dredging, dike creation, and dredged material placement to create the land and provide a deep channel from the Main Channel to the new terminal. The created land would be approximately 15 acres (enough to accommodate the marine terminal and Tank Farm 1). Since the primary advantage of this alternative would be the opportunity to locate the terminal even farther from the community than Berth 408, the new land would probably be located near the southeast corner of Pier 400, the most remote part of the Outer Harbor. The construction of a landfill outside the harbor is not considered feasible for reasons of cost and safety. Tank Farm 2 and all pipelines would be constructed and operated as in the proposed Project.

Analysis. This alternative would have one advantage over the proposed Project: fewer health risk impacts due to the greater distance of the berth, and therefore ship hoteling emissions, from sensitive receptors. Its disadvantages would include substantially greater cost, greater construction-related impacts on air and water quality, and loss of marine habitat (the Port has sufficient habitat credits to mitigate that loss, but agency policy and Clean Water Act requirements include avoidance of the impact before the use of compensatory mitigation). Depending on the actual configuration of the terminal this alternative could have greater operational-phase air emissions due to the longer transit time to the berth.

Constructing an additional landfill in the Outer Harbor to expand terminal capacity would not meet the Project objective of maximizing the use of existing waterways and available shoreline within the Port. Furthermore, creation of the new land would take at least two years, meaning that this option would be available too late for use by the applicant.

Finally, this alternative would be inconsistent with the entire 2020 and Deep-Draft Navigation planning process, which has developed Pier 400 to accommodate hazardous liquid bulk cargos. Pier 400 has already been considered for such use during the previous planning that culminated in the Deep Draft FEIS/FEIR (USACE and LAHD 1992). For all these reasons, therefore, similar to the conclusion reached regarding this alternative in the previous Deep Draft analyses (USACE and LAHD 1992), this alternative was eliminated from further consideration.

2.5.3.4 Use, Expansion, or Construction of a Crude Oil Marine Terminal in a Port Other Than the Port of Los Angeles

One objective of an alternative is to avoid the impacts of the proposed Project altogether. Locating a crude oil terminal somewhere other than the Port would accomplish that objective on a local basis, as none of the impacts of the proposed Project would occur as a result of activities in Los Angeles Harbor. This alternative assumes that a new or expanded crude oil marine terminal capable of accommodating VLCCs and handling an average of 677,000 bpd could and would be built somewhere in southern California outside the Port.

Project Description. Description of this alternative is problematic because it is not known where such a terminal might be built. However, the most promising location is the Port of Long Beach, given its deep water (note that maximum depths at the Port of San Diego and Port Hueneme are less than -50 feet [-15.2 m] MLLW) and proximity to southern California refineries, although there is currently no proposal for such a project. Long Beach has one site, Berth 124 adjacent to the existing British Petroleum crude oil marine terminal at Berth 121, that is suitable for the development of a terminal that could import crude oil in VLCCs.

The Long Beach Naval Station Re-Use Plan and the EIR/EIS included a liquid bulk terminal along with 3 million bbl of storage sited at Berth T124. After completion of the EIS/EIR, the Port of Long Beach issued a Request for Proposals to develop the liquid bulk terminal without the associated storage tanks, which were eliminated in order to provide space for a proposed Liquefied Natural Gas (LNG) terminal. The Port of Long Beach selected Oil Tanking, an independent terminaling company, to develop the terminal. After several years of planning, Oil Tanking withdrew from the project in 2005 due to their inability to secure commitments from potential customers to purchase the minimum throughput volumes necessary to justify construction of the terminal.

This analysis assumes that a facility similar to that considered for the site by Oil Tanking would be built at Long Beach because it would be much cheaper to build and operate a terminal in Long Beach than in San Diego or Hueneme due in part to their distance from refineries. That concept called for channel dredging to -76 feet (23 m) MLLW up to Berth T124 and dredging the berth to -81 ft (24.7 m) MLLW to form a basin in which tankers would sit while discharging their cargo (the tankers would enter the port at high tide in order to ensure sufficient water depth to reach the berth). The landside terminal would include sufficient tankage to accommodate VLCC cargos and a short pipeline to connect to the existing pipeline at Berth T121. There is sufficient vacant or underutilized land on that portion of Pier T to accommodate the new terminal.

Analysis. There are two major factors that make this alternative infeasible. First, it would be much more costly to develop a new deepwater terminal at Long Beach than at Berth 408. The water depths at Long Beach Berth T124 are -40 to -50 feet (-12 to -15 m MLLW; NOAA chart 18751), meaning that berth development would require substantial dredging. The Long Beach Main Channel, immediately adjacent to Berth T124, is already -76 feet (-23 m) MLLW but would require some dredging to provide access to Berth 124. The reduced pipeline costs would be more than offset by the costs of dredging and disposing of over 1 million cubic yards of dredged material. In addition to the increased costs, dredging and associated sediment disposal would have impacts on air quality (due to emissions from dredging equipment), water quality (due to increased turbidity), biological resources (due to increased turbidity and disruption of biological communities), and marine transportation (due to the presence of dredging and support vessels).

Second, creation of a terminal in Long Beach would exacerbate southern California's vulnerability to interruptions to the supply of crude oil. Siting an additional liquid bulk terminal directly adjacent Berth T121 is not in the best interests of the state due to the concentration of critical oil imports in one location. A marine oil terminal in each port provides needed redundancy should circumstances remove one of the terminals from service. Flynn (2001) notes that the extent to which ports are critical infrastructure is highlighted by the dependency of California on a single pier in the Port of Long Beach for the offloading of 45 percent of all the maritime crude shipments, or roughly 25 percent of all the crude oil consumed by the entire state of California at that time. This pier in Long Beach has a 42-inch diameter pipeline which services the refineries located in the Los Angeles Basin. Currently, there is insufficient berthing for all the customers that choose to use this berth, necessitating those companies who do not have the primary berthing right to wait to offload. Due to the paucity of crude oil storage facilities in the basin, there is only enough storage capacity to keep area refineries operating for about a week. Without the uninterrupted weekly supply of crude oil to the T121 terminal, Los Angeles refineries would begin shutting down in 7 to 10 days, leaving southern Californians without gasoline, diesel fuel, and jet fuel.

Southern California's vulnerability due to its reliance on a single berth in the Port of Long Beach was illustrated by an incident in April 2001, when two small planes crashed head-on and sank in the Long Beach Main Channel. The channel was closed, and although other vessels were able to access Long Beach berths from Angel's Gate on the Los Angeles side of the bay, the tanker vessels drew too much water to be able to enter by the Angel's Gate then travel across the outer bay to Long Beach. By the time the channel was cleared, area refiners were threatening to shut down. The creation of a second Long Beach terminal, at T123, would do nothing to rectify that vulnerability.

As a note, the LAHD has no authority to construct or expand facilities outside its jurisdictional boundaries or to direct cargo to any such facilities, and the USACE does not have any other active application to construct such a terminal. Accordingly, from the LAHD's perspective, this alternative is the same as the No Federal Action/No Project alternative considered above because the LAHD would not be involved in approving this alternative.

Because use of other ports would result in greater environmental impacts in some resource areas and would result in a disadvantageous concentration of energy sources in one location, this alternative was eliminated from further consideration.

2.5.3.5 Offshore Mooring Site with Tank Farm Facilities on Terminal Island

Avoiding potential aesthetic, air quality, health risk, and water quality impacts could potentially be accomplished by locating a crude oil terminal even farther from the communities than could be accomplished by using existing land or creating new land inside the harbor. Under this alternative, an offshore single-point mooring would be constructed in the ocean outside the Port breakwater. The concept represents an expanded version of the existing El Segundo facility.

Project Description. The mooring would be located in water deep enough to accommodate deep-draft VLCC vessels and far enough from the shipping lanes into and out of the Los Angeles and Long Beach harbors not to interfere with vessel traffic, meaning that it would be several miles offshore. The mooring would be connected via an underwater pipeline to onshore tank farm facilities; this analysis assumes the tankage would be located at Tank Farm Site 2 (Section 2.4.2.2). The tankers would pump their cargoes from their holds directly into that pipeline. The length of the underwater pipeline, the site of the pipeline's landfall, and the overland routing to the tank farm facilities would depend on the area selected for the mooring site.

Analysis. This alternative appears to have only minor institutional constraints. The LAHD has no authority to build a terminal outside its jurisdictional boundaries or to direct cargo to any such facilities. However, in this case the LAHD could implement such a project via a joint powers authority or a state or federal agency, much as LAHD participated in the Alameda Corridor Transportation Authority in order to implement that project. The project would not be inconsistent with planning goals that aim to move liquid bulk facilities away from the community.

From an environmental perspective the alternative has advantages and disadvantages compared to the proposed Project. The advantages include the fact that the vessels would be farther removed from the community, so that air quality and public health impacts would be reduced, and the potential for vessel traffic conflicts inside the harbor would be eliminated. The disadvantages include: 1) the potential for weather-induced interruptions of supply; 2) accidents resulting in releases of oil on rough ocean waters, where cleanup would be far more difficult than inside the harbor; 3) the environmental impacts to the marine community associated with the construction of a pipeline several miles long; and 4) the very high cost of construction.

An examination of potential sites outside the breakwater by Moffatt & Nichol (2005; the entire report is included in Appendix F) came to the same conclusions, stating that:

> *"…an offshore single point mooring location does not appear to be feasible, primarily for cost reasons and secondarily because of environmental and technical challenges. The significant cost elements are for construction of the offshore pipeline and single point mooring. The primary environmental concerns are the risk of oil spill over the life of the operation and impacts to marine resources during construction".*

The Deep Draft EIS also rejected an offshore mooring alternative (monobuoys) due to severe engineering constraints. This alternative was therefore found to be infeasible and eliminated from further consideration.

2.5.3.6 Ship to Bay Area and Pipeline to Southern California

Northern California has several refineries served by crude oil import terminals located in the San Francisco Bay area. Although northern California will also experience growth in the demand for foreign crude (CEC 2005), this alternative considers the possibility of utilizing terminals and crude oil transport infrastructure in northern California's to meet southern California's demand. This alternative could eliminate most impacts to human populations and natural resources in southern California by displacing those impacts to northern California.

Project Description. This alternative would utilize marine petroleum infrastructure in the San Francisco Bay Area for product unloading and storage, and then use pipelines to transport the crude to the southern California area refineries. As described below, this alternative would require construction of a new deep-draft crude oil terminal in the Bay Area because existing facilities would not be able to accommodate both northern California's demand and southern California's demand. The new terminal would probably be located in the east bay area, where water depths are somewhat greater than elsewhere in San Francisco Bay. That would necessitate dredging a channel to -81-feet-deep (-24.7 m) MLLW from the outer bay (near San Francisco) several miles to the terminal site, constructing a marine terminal similar to the proposed Project, and constructing new storage facilities (i.e., a tank farm).

The refining centers in the Los Angeles Basin and the Bay Area have separate pipeline distribution networks that are not linked and that are encumbered with proprietary rights. Even if rights to the existing pipelines could be acquired, however, a new pipeline would have to be constructed to link the Bay Area network to the Los Angeles Basin network because there is currently no means to transport large quantities of crude oil from the Bay Area to southern California.

Analysis. Two institutional factors make this alternative infeasible. The first is that the LAHD has no authority to construct or authorize the construction of pipeline facilities outside its jurisdictional boundaries. It is possible that another agency or joint powers authority could undertake such a project, but the LAHD has no authority to approve such an undertaking. A pipeline might need permits from the USACE for stream crossings, potentially giving the USACE a measure of jurisdiction over the project. Its feasibility and potential impacts are being considered in this document because it could potentially be implemented by PLAMT under the jurisdiction of other agencies.

The second constraint is the impracticality of constructing two new deep-draft crude oil terminals in northern California. As the CEC (2005) points out, the future shortage of refining capacity and crude oil supplies is not confined to southern California (i.e., more than one new deep-draft crude oil terminal would have to be constructed). Accordingly, the Bay Area will need to develop additional terminal capacity to meet local demand for imported crude oil and is unlikely to support additional terminal facilities that would be devoted to southern California's demand. However, geological features of the Bay Area ports, including hard rock underwater that would necessitate the use of explosives in order to create a channel sufficiently deep to allow VLCCs, make it unlikely that a new Bay Area terminal would have a deep-draft berth capable of accommodating VLCCs.

Construction would have all the environmental impacts of the proposed Project associated with terminal, tank farm, and local pipeline construction. It would also involve substantial dredging, since there are no deep-water berths in the Bay Area. Accordingly, the construction would have significant impacts on air quality, biological resources, marine transportation, and water quality. Operation of the terminal would probably have significant air quality and public health impacts, and could have risk of upset and marine transportation impacts, depending upon the location of the terminals.

This alternative was considered to be both environmentally adverse and institutionally infeasible at this time. The alternative was therefore eliminated from further consideration.

2.5.3.7 Constrain Vessel Sizes at Berth 408

Transporting crude oil in marine tanker vessels has impacts related to air quality, risk of upset, and navigational safety, at a minimum. The magnitude of those impacts is partially a function of the number and size of vessels that arrive at the berth. Smaller vessels have more air emissions per barrel of oil brought in than do larger vessels (see Section 3.2), so that it is advantageous from an air quality and public health point of view to use larger vessels. Larger vessels also means fewer vessel calls to import a given volume of oil, thus reducing the risk of upset and the potential for navigational conflicts. Accordingly, the possibility of reducing air quality impacts by constructing the proposed Project, but imposing as a lease condition restricting the use of Berth 408 to VLCC and Suezmax vessels, was considered through this alternative.

Project Description. This alternative would alter the proposed operation of the Berth 408 terminal. The proposed Project would be built as described in Sections 2.4.2 and 2.4.3, and the throughput would be the same as described in Table 2-1. The difference would be that the maximum number of vessels per year would be different, and most probably lower, because a lease condition would ensure that the terminal operator could not accept vessels smaller than Suezmax. The exact number of vessel calls under this alternative is uncertain, as it is very possible that market forces would result in under-utilization of the berth. As an example, however, if 677,000 bpd were to come in to Berth 408 solely via fully-loaded VLCCs carrying 2.0 million bbl each, the number of vessels per year would be approximately 124; if the terminal accommodated half VLCCs and half Suezmax vessels, the number of vessels per year could be approximately 165.

Analysis. If feasible, this alternative would meet the project objectives related to meeting the future demand for imported crude oil. There are no institutional issues that would render it infeasible, but there are a number of logistical issues that taken together would make this alternative economically infeasible and would also result in greater vulnerability to potential supply interruptions caused by geopolitical instability.

First, restricting the terminal to accepting only the largest vessels would limit the applicant’s ability to supply certain specialty crude types and to serve small refiners. As an example, highly viscous grades of crude that need to be heated in order to pump them onto the vessel (at the loading port) and off the vessel (at the unloading port, i.e., the Port of Los Angeles) may not be able to be shipped in the necessary quantities because double-hulled VLCCs are not equipped with heaters (whereas smaller vessels are equipped with heaters). Second, certain sources of crude oil would not be available to the applicant or its customers because some loading ports cannot handle the larger vessels (i.e., loading ports that can only handle smaller vessels could not ship to the Berth 408 terminal). Third, the arrival of a succession of VLCCs and Suezmax vessels, and the higher variability of transit times, would greatly increase conflicts around landside use and scheduling of pipelines and storage tanks due to the need to offload an entire large vessel all at once and then quickly prepare for the next vessel arrival. Increased pipeline and storage tank schedule conflicts could result in greater hoteling time and therefore more air emissions from vessels at berth. Fourth, prohibiting the use of small vessels would also limit the ability of the applicant to respond to quickly changing market conditions, thus further reducing the economic feasibility of this alternative. Finally, restricting the vessel mix to the largest classes could increase the region’s vulnerability to supply interruptions caused by geopolitical instability. This would be an issue because large vessels would come from a small subset of producing regions, due to the economics of shipping, which dictate that large vessels are most economical for long voyages.

This alternative could have somewhat fewer environmental impacts than the proposed Project because of the potential decrease in average annual air emissions that would be associated with the use of larger vessels (i.e., lower emissions per barrel transported). Note, however, that the region's need for the operational flexibility and the variety of crude types that would be transported in smaller vessels could mean that smaller vessels would come to other terminals in the San Pedro Bay ports, thereby canceling the potential air quality advantages of this alternative. In addition, as noted above, landside pipeline and tank schedule conflicts could result in greater hoteling time for vessels at Berth 408. None of the other impacts of the proposed Project would be reduced or eliminated by this alternative.

This alternative was eliminated from further analysis because the feasibility issues posed by the logistical disadvantages of this alternative were judged to outweigh its relatively limited potential environmental advantages.

2.5.3.8 Alternative Tank Farm Configurations

Several potential alternative tank farm locations were considered as possible alternatives to the Project. Alternative tank farm configurations considered include consolidation of tanks at Tank Farm Site 2 or the use of sites including the Naval Reserve site (east of Navy Way between Seaside Avenue and Reeves Avenue); Reeves Avenue/Navy Way (east of Navy Way south of Reeves Avenue); sites north of Seaside Avenue and south of the railroad; or the southeast corner of Pier 400 (southeast of Navy Way as the road curves west around the edge of APM). Note that several of these sites were proposed in the NOI/NOP (Appendix A).

Project Description. This alternative would be identical to the proposed Project in terms of the construction of the Marine Terminal and the pipelines and in the number of vessel calls and amount of crude oil throughput. It would differ from the proposed Project only in the location of the crude oil storage tanks. The number and capacity of storage tanks would be the same as the proposed Project, but Tank Farm Site 1 would be smaller, having only a surge tank (which would need to be larger than 50,000 bbl, up to 100,000 bbl, in some configurations for engineering and safety reasons) and the 15,000 bbl MGO vessel fuel tank. The land given up from Tank Farm Site 1 would not be devoted to any other use; instead, it is assumed that it would be left vacant.

One possible scenario would be to consolidate all storage tanks at Tank Farm Site 2 such that instead of having two 250,000 bbl tanks at Tank Farm Site 1 and 14 at Tank Farm Site 2, all 16 storage tanks would be located at Tank Farm Site 2. Additional tanks could also be sited at other alternative locations, as listed immediately above.

Analysis. This alternative would meet the Project objectives of accommodating deep-draft VLCCs and providing infrastructure that would efficiently accommodate a portion of the foreseeable crude oil volumes expected to enter the Port. It is technically feasible, as it would have essentially the same design and operational components as the proposed Project.

This alternative would not, however, meet the objective of maximizing the use of deep-water facilities created for the purpose by the Deep-Draft Navigation Improvements Project. In addition, it would it be inconsistent with using available land on Pier 400 for crude oil operations. Furthermore, it would not lessen or avoid significant impacts of the Project.

Accordingly, and because this alternative would conflict with basic land-use policies without lessening or avoiding an identified significant environmental impact, it was eliminated from further consideration.

2.5.3.9 Non-shipping Use of Pier 400 Project Site

The California Coastal Act and the Tidelands Trust Act of 1911 permit non-shipping uses in the Port so long as they are water dependent, water related, or directly support uses in furtherance of navigation, commerce, and fisheries. Accordingly, many of the Port's tenants are not marine terminals, but rather supporting industries such as chandleries, fish packers, warehouses, vessel repair yards, marine research facilities, and visitor-serving facilities related to waterfront recreation. Devoting some or all of the project site to a use that is not a marine terminal (see Section 2.5.2.1 for a discussion of why a marine terminal is not a feasible use) could avoid all of the operational impacts of the proposed Project and most of the construction-related impacts.

Project Description. This alternative would locate a water related use, such as a warehousing operation, a maritime academy, a boatbuilding yard, or a business that supports the maritime industry at Berth 408, instead of the proposed marine terminal. The site of proposed Tank Farm 2 would be left vacant (it is assumed, however, that some low-density container storage activities would occur as described for the No Project/No Federal Action Alternative, Section 2.5.2.1). Construction would consist of erecting whatever buildings were necessary to the selected use, providing access roads and parking areas, and extending utilities to serve the facility.

Analysis. This alternative would have fewer environmental impacts than the proposed Project. Depending upon the selected use, there could be more traffic than under the proposed Project, but the site's small size makes it unlikely that the traffic would have a significant impact on local or regional intersections and roadways.

However, this alternative would not meet any of the project objectives related to accommodating future demand for crude oil imports, and would conflict with the planned and permitted uses of Pier 400 and the USACE's purpose in creating the deep-draft channel and Pier 400. Under the PMP (LAHD 2006), as certified by the California Coastal Commission, Pier 400 is part of Planning Area 9 and is dedicated to container and liquid bulk operations. Planning Area 9 is zoned for commercial shipping, liquid bulk handling, and heavy industrial and commercial activities; the zoning does not permit non-industrial uses such as academic institutions and warehouses. Use of the site for non-shipping activities would preclude its future use for the liquid bulk operations it was created to support. Furthermore, the site's remoteness would reduce its attractiveness to most types of port-related businesses.

Because a non-shipping use would be incompatible with the designated uses of Pier 400 and would not meet any of the project objectives, this alternative was eliminated from further consideration.

2.5.3.10 Relocation of Existing Liquid Bulk Terminals to Pier 400

As discussed in Section 1.1.1, one of the objectives of the Deep Draft Navigation Improvements Project that created Pier 400 was to provide a site remote from populated areas that would support hazardous liquid bulk operations. An alternative that relocated an existing liquid bulk terminal or tank farm to Pier 400 would be consistent with that objective, and at the same time would avoid the impacts of the proposed Project, which would not be built. Under this alternative, existing marine oil terminals within the Port not in compliance with the Port Risk Management Plan (RMP) would be relocated to currently vacant portions of Pier 400. As a result of this relocation, the proposed Marine Terminal for receiving crude oil would not be built because the land would be occupied by the relocated facilities.

Project Description. This alternative would demolish one of the existing liquid bulk terminals elsewhere in the Port and build a replacement at the Berth 408 site. The small size of the Berth 408 site means that, in practice, only one tank farm could be relocated to the site. The project would include construction of necessary pipelines to connect the new tank farm to its customers and suppliers, including the berth that currently supplies that tank farm. Those pipelines are assumed to follow the routes of the proposed Project's pipelines.

Analysis. This alternative would be consistent with existing land use plans and zoning. If this alternative were to be implemented, however, an additional marine crude oil terminal could not be built and the identified need for infrastructure to accommodate the future demand for imported crude oil would not be met. Accordingly, the alternative would not meet the project objectives. The following discussion presents the background of the LAHD's effort to relocate liquid bulk facilities.

In 1979, LAHD developed the PMP, which established policies and guidelines to direct the future development of the Port. In 1980, the California Coastal Commission (CCC) approved the PMP (LAHD 2006) with the exception of projects that involved liquid bulk materials. In consideration of the explosion of Union Oil's *S.S. Sansinena* on December 17, 1976 in the Outer Harbor, the CCC asked LAHD to "incorporate safety and protection findings" for projects which "involved the transporting, handling, and storage of liquid bulk cargoes." In November 1983, the LAHD created an RMP for hazardous liquid bulk commodities as an amendment to the PMP, as a means for:

> *"…judiciously managing, controlling and directing proposed developments in order to prevent, insure and protect against and minimize risks of loss or significant adverse impacts due to potential hazards within and surrounding the Port of Los Angeles".*

The Port's RMP detailed the criteria for determining whether a liquid bulk cargo facility was inconsistent with the RMP and ways to eliminate the conflict. The LAHD designed the RMP to minimize or eliminate overlaps of hazard footprints in areas of substantial residential, recreational, or visitor populations; high-density working populations; and critical economic impact facilities.

The Port's RMP allowed for any one of the following methods to resolve the inconsistency: (1) relocate the hazardous facility; (2) relocate the vulnerable resource; (3) apply appropriate mitigation measures at the hazardous facility; (4) apply appropriate mitigation measures at the vulnerable resource. As one of the implementation strategies, the RMP envisioned the relocation and segregation of liquid bulk facilities to areas in remote locations of the harbor. The LAHD found that "*the only available port area large enough which can be effectively developed and used for this purpose lies in filling water areas south of Terminal Island.*" The RMP foresaw the creation of an island landfill as part of a program to dredge deeper channels that would accommodate modern containerships and liquid bulk carriers.

Hazardous Facilities Relocation Plan and Implementation Program

Using policies and methodologies contained in the RMP, LAHD examined all liquid bulk facilities containing hazardous cargoes in the harbor to determine if the facilities were inconsistent with its RMP. The findings and recommendations of that analysis were presented in the *Hazardous Facilities Relocation Plan and Implementation Program* (LAHD 1987). The goals of the effort were to:

> *"Improve public safety, minimize land use conflicts and provide for the efficient handling of hazardous liquid bulk commodities at the port by eliminating the risk exposure to people and critical impact facilities caused by facilities handling hazardous liquid bulk cargoes* ***that, due to their operations and/or location, are inconsistent with the provisions of the Port Risk Management Plan*** *[emphasis added]."*

Through this process, LAHD determined that 16 of 25 liquid bulk facilities in the Port handled hazardous materials as defined by the RMP and the Los Angeles Fire Department. LAHD examined these facilities to determine the potential area of risk and to compare the hazardous footprint with surrounding activities and facilities, and found seven facilities (Table 2-14) inconsistent with the RMP. LAHD identified six as potential candidates for relocation and one for phasing out at the expiration of its lease.

Table 2-14. Facilities Identified as Inconsistent with Port's Risk Management Plan at the Time of Approval of the Plan (1987)

Facility	*Considered Relocation Site*
U.S. Navy Fuel Depot – Berths 38-40	Yes – To Long Beach Naval Station
Union Oil Tank Farm – 22nd Street (including the terminal at Berth 47)	Yes – To Pier 400 *Note: The terminal is consistent with the RMP but not with the goals of the San Pedro Waterfront Plan, which proposes conversion of all Port property on the west side of the Main Channel south of the Vincent Thomas Bridge to commercial or recreational uses.*
GATX (now Westway) – Berths 70-71	Yes – To Inner Harbor (most likely Mormon Island)
Petrolane (now Kinder-Morgan) – Berth 120 (no storage, only berth)	No – Designated for phase out
GATX (now Kinder-Morgan) – Berths 118-119	Yes – To Pier 400
Mobil Oil (now ExxonMobil) – Berths 238-240	Yes – To Pier 400
Mobil Oil (now ExxonMobil) – Terminal Island Tank Farm	Yes – To Pier 400

2.5.3.10.1 Liquid Bulk Relocation

The LAHD required the tenants inconsistent with the RMP to mitigate their facilities by means of specified compliance mechanisms, one of which was relocation of the facilities. The LAHD designated Pier 400, the outermost site of the Port, as the natural site for the relocation of several of these facilities, but due to the excessive costs of this option, all tenants instead chose to implement other mitigation measures.

Of the six candidates for relocation, two have ceased to operate: the U.S. Navy Fuel Depot, in 1985, and Union Oil Tank Farm (including the terminal at Berth 47), in 1988. Two others have come into compliance due to the closing of Todd Shipyard at Berth 100. Under the RMP, Todd Shipyard was designated a vulnerable resource, necessitating the relocation of the GATX facility at Berth 118-119 and Petrolane at Berth 120. The closure of the shipyard in 1989 eliminated the need to relocate these facilities.

Mobil Oil. Instead of relocating its operations, Mobil Oil elected to construct improvements and institute changes in product handling at Berths 238-240 and the Terminal Island Tank Farm. The following improvements and changes were identified (LAHD 1992), and in 1994, Permit 704, containing provisions implementing the recommendations from the 1992 Risk Management Analysis Report, was issued to Mobil Oil Corporation for continued operation of their facilities at Berths 238-240 and the Terminal Island Tank Farm:

1. The handling of hazardous commodities at Berth 240 was prohibited;
2. All vessels or barges delivering or receiving hazardous commodities were equipped with and use Inert Gas Systems while at berth at the marine terminal;
3. Additional containment walls were constructed within the existing containment areas;
4. Handling certain products from tanks near Berth 240 was prohibited;
5. Tank #5007 was fitted with a floating roof in order to store MTBE;
6. The fire protection system was upgraded;
7. Tank #3000x07 was removed from service; and
8. The amount of crude oil stored in Tank #1750x06 was limited to a maximum of 100,000 bbl.

These changes eliminated the overlapping of hazardous footprints on the Ports O' Call Village, Southwest Marine, and the U.S. Customs Building. In addition, the facility at Berths 238-240 was originally inconsistent, in part, because of the proximity of Southwest Marine with its high worker population. The lease at Southwest Marine was terminated in 2004 and the site is now vacant and no longer considered a vulnerable resource. The vulnerable resource that was inconsistent with the Mobil Oil Terminal Island Tank Farm, the U.S. Customs House, relocated its operations in 2002. With the improvements and operational changes called for in the permit, the vacation of Southwest Marine, and the relocation of the Customs facility, the Mobil facilities came into compliance with the RMP.

GATX Berth 70-71. The GATX liquid bulk facility at Berths 70-71 was the subject of numerous risk management analyses (LAHD 1985, 1995, 1996a, 1996b, 1997, and 2000). The analysis in 1985 (LAHD 1985) found that the facility was inconsistent with the RMP. This facility was therefore recommended for relocation to Mormon Island at the end of its lease in 1995 (LAHD 1987). In 1995, GATX applied for a lease renewal for this facility. To receive a long-term lease, GATX was informed that its facility must be consistent with the RMP, and that discussion of lease renewal was conditional on GATX modifying its operation. The subsequent risk analysis (LAHD 1995) found the facility inconsistent with the RMP because of the storage of methylene chloride at locations within the facility. The report also outlined the changes necessary for the facility to comply with the RMP. As a result of the report and discussions with the Port, GATX ceased storage of methylene chloride at the Berths 70-71 facility. The new lease contained a listing of products the facility is permitted to handle and a requirement that all new products be evaluated prior to use to ensure the facility's continued consistency with the RMP. In 1995, the LAHD entered into a long term agreement with Westway to operate the terminal. Subsequently, the lease for this facility has been rescinded by the Port and the facility will be demolished and used for activities consistent with the San Pedro Waterfront redevelopment. Currently, all liquid bulk terminals within the Port are consistent with the RMP (Table 2-15) or are scheduled for removal from the Port. The liquid bulk terminals are consistent with the RMP because the facilities have either relocated away from a vulnerable resource or shut down, or the facility has modified operations appropriately.

Table 2-15. Compliance Status of Port Liquid Bulk Facilities with the Risk Management Plan

Facility	*Compliance Method*
U.S. Navy Fuel Depot -Berths 38-40	Relocated to Long Beach Naval Station.
Union Oil Tank Farm - 22nd Street (including the terminal at Berth 47).	Ceased operation.
GATX (later Westway) - Berths 70-71	Initially modified operations to reduce hazard risk. This terminal is now in the process of decommissioning and remediation.)
GATX (Berths 118-119) and Petrolane (Berth 120) (now Kinder-Morgan) - Berths 118-120	Nearby vulnerable resource (Todd Shipyard) closed. Terminal to be relocated elsewhere in the Port.
Mobil Oil (now ExxonMobil) – Berths 238-240	Modified operations and constructed improvements to reduce hazard risk. Also, Southwest Marine is no longer a vulnerable resource.
Mobil Oil (now ExxonMobil) – Terminal Island Tank Farm	Modified operations and constructed improvements to reduce hazard risk.
Source: LAHD 1987; updated to reflect current facility ownership and status.	

In addition to there no longer being a need under the RMP to relocate these facilities to Pier 400, the relocation would preclude the construction and operation of an additional crude oil terminal at the site. Project objectives would therefore not be achieved. This alternative was therefore eliminated from further consideration.

This alternative would avoid all of the significant environmental impacts of the proposed Project: construction and operation of the relocated tank farm would have the same impacts as described for the proposed Project (Section 3.3).

Because of the changes described above, this alternative is no longer an appropriate use of the site. Accordingly, this alternative was eliminated from further consideration.

2.5.3.11 New Container Terminal on Pier 400

The impacts specifically associated with the handling of crude oil (e.g., risk of upset, water quality, biology) could be avoided by devoting the project site to a use other than a crude oil terminal. Under the PMP, Amendment Number 12, effective July 15, 1993, the only allowable activity at Pier 400 other than for liquid bulk is general cargo use that includes break bulk, dry bulk, etc., including containers. This alternative would involve building a new container terminal at Face C or D of Pier 400.

Project Description. A new container terminal would require construction of a pile-supported, concrete wharf on Face D of Pier 400 adjacent to the Tank Farm 1 site; installation of electric-powered A-frame container cranes on the wharf; construction of a container yard (which might be divided between the Tank Farm 1 site and the site of Tank Farm 2); administration, control, and maintenance buildings; utilities, fencing and lighting; and a gate complex. No dredging would be needed. Given the small size of the site an on-dock railyard would not be included. The terminal would load and unload container vessels, manage the containers in the container yard, and discharge and receive containers to and from regional destinations and local railyards via trucks. The terminal would have only one berth, and thus would handle a maximum of approximately 100 vessel calls per year.

Analysis. This alternative would not meet the project objectives related to accommodating future demand for imported crude oil. In addition, it has a number of institutional and technical constraints that make it infeasible. Use of the site for a container terminal, while consistent with the allowed uses on Pier 400, would preclude its use for the original purpose of the deep channel on the south side of Pier 400, namely a deep-draft crude oil terminal.

Construction of a container terminal would likely be more costly than construction of the proposed Project, given the resources necessary to construct a wharf and container yard. Most important, the size and configuration of the proposed Project site is not sufficient for the construction of a container terminal. The site is far too small for a container terminal: the smallest operating terminal in either San Pedro Bay port, the terminal on Pier C in Long Beach, is approximately 60 acres (24 ha.), whereas the Berth 408 site is only 11 acres (3.3 ha), and even the addition of the Tank Farm 2 site would only yield a total of 48 acres (15 ha). This would also split the majority of the backlands area from the wharf and make the terminal inefficient. Such a terminal could not be operated economically; particularly for international cargo (the Pier C terminal handles mostly domestic cargo from Hawaii and U.S. Pacific possessions). In addition, berthing container ships at Face D would pose a safety hazard as wave and tidal current action at that location is greater than at the protected berths characteristic of container terminals.

This alternative would, in general, have fewer environmental impacts than the proposed Project. Specifically, because there would be fewer, smaller vessels the air emissions would likely be less, although the greater truck traffic would partially offset the lower vessel emissions. The risk of upset and potential water quality impacts would also be less, since the consequences of a vessel release would be less for a container ship than for a tanker vessel.

Because this alternative is technically infeasible it was eliminated from further consideration.

2.5.3.12 Refined Product/Alternative Fuels Import Terminal on Pier 400

A possible use of the Berth 408 site would be construction of a terminal to receive refined product (gasoline, diesel, jet fuel, additives) and/or an alternative fuel (e.g., biodiesel, ethanol) instead of crude oil. This alternative was considered because it has been suggested as a way to avoid the need to build large crude oil terminals as well as to avoid the need to increase the region's refining capacity. This alternative assumes that excess refinery capacity in other parts of the country, or in foreign countries, would export product to southern California via a dedicated, high-volume, liquid-bulk-product marine terminal. Note that a terminal that could import gaseous alternative fuels (e.g. propane, liquefied or compressed natural gas (LNG/CNG)) would be a fundamentally different type of facility, and, in view of the outcome of proposals for such facilities elsewhere in southern California, is not deemed a practicable alternative at the Port.

Project Description. This alternative would involve construction of a berthing facility and marine terminal very similar to the proposed Project, including tank farms at sites 1 and 2. It is likely that the tanks would be smaller but more numerous in order to handle the variety of products. Distribution from the tank farms could be accomplished by pipelines, which would need to be constructed, and/or rail cars and/or trucks, which would require construction of railcar and/or tank truck loading facilities and gates. The pipelines and their routes would likely differ somewhat from those of the proposed Project, but the details are unknown at this level of analysis. The number of rail and/or truck trips would depend upon the size of the facility and the proportion of the throughput distributed by rail or truck.

Operation of the facility would involve unloading a variety of smaller tankers (refined product is not carried in VLCC or Suezmax vessels), storing the cargo at the tank farm sites, and pumping it to various area tank farms and refineries as needed. The operation would involve a larger number of vessel calls to achieve a volume of product deliveries that is comparable to the proposed Project, because the average capacity of product tankers is lower than that for crude oil tankers. For example, CEC (2007b) states that an average crude oil tanker load is about 700,000 bbl while an average product tanker load is around 300,000 bbl.

Analysis. This alternative would potentially accommodate demand for the final products refined from crude oil (e.g., gasoline, diesel, and jet fuel) or non-petroleum fuels (e.g., ethanol). It would be consistent with land use plans and policies for Pier 400 in that it would locate a hazardous cargo facility on Pier 400, away from the community. It would also forward some of the objectives of the State Alternative Fuels Plan (CEC and CARB 2007). However, it would not meet project objectives because, in practice, Berth 408 would not accommodate VLCCs (because such refined products are not carried on VLCCs, nor in Suezmax vessels). Thus, this alternative would not maximize the use of deep-water facilities created for the purpose of accommodating VLCCs by the

Deep-Draft Navigation Improvements Project, nor would it optimize the Port's overall utilization of available shoreline.

This alternative would not eliminate any of the environmental impacts associated with the proposed Project and it would, in fact, have greater impacts in certain areas. Specifically, the air quality impacts would likely be greater because of the use of a larger number of smaller vessels to bring in the product. In addition, the risk of upset issues associated with the marine transport of large quantities of highly flammable and/or explosive liquid cargos would be greater than for the proposed Project. Refined products are typically more flammable than crude oil, as well as being more toxic to birds and marine mammals.

This alternative was eliminated from further consideration because it would not meet the project objectives and would not eliminate any of the environmental impacts associated with the proposed Project.

2.5.3.13 Renewable Energy Generation Facility

One possibility that has been suggested for addressing southern California's future energy needs is to curtail the use of petroleum-based fuels in favor of alternative energy sources, including carbon-based fuels such as natural gases and biofuels, and non-carbon-based fuels such as hydrogen, solar power, and wind power. As described in Section 1.1.3, in 2007 the Governor's Executive Order S-01-07 and AB 1007 established the State Alternative Fuels Plan (CEC and CARB 2007), which aims to stimulate the development of alternative fuels, vehicles, and infrastructure; evaluate alternative fuels; and increase the use of alternative fuels, thus decreasing reliance on petroleum-based fuels, in a non-polluting manner. Earlier measures, such as the California Bioenergy Action Plan (CEC 2006) and fuel standards and consumption goals set by the CARB and the CEC, have similar aims. This alternative would help to implement those plans and measures by substituting for the proposed Project a facility devoted to alternative energy.

Project Description. In this alternative, the Port would reject PLAMT's application and would not build a crude oil marine terminal at the Port. Instead, the Port would solicit proposals to construct and operate a renewable energy facility on all or portions of the site. Although no specific proposal has been advanced, potential facilities could include solar panel arrays for generating electrical power, a wind energy facility, or a hydrogen fuel production and/or storage plant. The potential for a receiving terminal for carbon-based alternative fuels such as biofuels or ethanol was considered in Section 2.5.3.12.

Building a solar generating station would entail the installation at Tank Farm Sites 1 and 2 of approximately 40 acres of solar panels, administrative and support buildings, necessary electrical gear and a switchyard, and transmission lines linking the facility to the local electrical grid. Operation would require operational personnel and occasional deliveries of supplies, parts, and contract maintenance workers.

A wind energy facility would require the installation of an array of wind turbines. The number and design of the turbines would depend upon the firm that ultimately chose to construct and operate the facility. The facility would also require the construction of administrative buildings, electrical gear and a switchyard, and transmission lines. Operation would require operational personnel and occasional deliveries of supplies, parts, and contract maintenance workers.

It is uncertain whether the site could support a hydrogen fuel production plant, given its fragmented character; further study would be needed to define this use.

Analysis. This alternative would be consistent with a number of existing national and state plans and policies that seek to increase California's use of renewable energy sources (e.g., CEC and CARB 2007). The solar power scenario would avoid or lessen a number of impacts of the proposed Project, including impacts in the areas of risk of upset, maritime navigation conflicts, water quality, and biology. The wind energy scenario would avoid the risk of upset, maritime, and water quality impacts, but would have potentially significant impacts on biology, as wind turbines have been implicated in bird deaths (e.g., Danish Wind Industry Association 2003), including in coastal areas (Curry & Kerlinger 2006). A proposal to locate wind turbines on the San Pedro Breakwater in the early 1990s raised concerns with the wildlife agencies because of potential impacts on the endangered California Least Tern.

The alternative would not, however, be consistent with land use policies that emphasize the use of port lands, especially waterfront areas, for water-dependent and water-related uses directly connected with maritime commerce, navigation, fisheries, and recreation. There are other areas in southern California that could support such uses without land-use conflicts, and other means of accomplishing the same objective in the harbor district without land-use conflicts (e.g., the Port's initiative to install solar power on harbor-area structures, Section 1.6.2.3). The alternative would also preclude uses that would realize the benefits of the deep-draft channel created by the USACE to accommodate deep-draft tanker vessels. Accordingly, this alternative was eliminated from consideration in this document because it would be inconsistent with land use policies and would not accomplish the objectives of the project to provide the facilities needed to accommodate a portion of the future demand for crude oil imports to southern California.

2.6 Project Baselines

To determine significance, impacts resulting from implementation of the proposed Project and alternatives are compared to a baseline condition. The difference between the proposed Project and the baseline impact levels is then compared to a threshold to determine if the difference between the two is significant. As discussed in Section 1.5.5, CEQA and NEPA use different baseline concepts against which to determine significance.

The baselines used to analyze the proposed Project are presented below. The CEQA baseline remains fixed for the duration of the Project, reflecting conditions that prevailed in June 2004, the date on which the NOP/IS was issued. The NEPA baseline changes over time in response to increases or decreases in activity or other factors that would occur at the Project site absent federal action, such as a USACE permit. Because the baselines are different, review under CEQA and NEPA could reach different conclusions concerning impacts at a given point in time from the same project activity.

2.6.1 NEPA Baseline

The principles governing the selection and definition of the NEPA Baseline are described in Section 1.5.5. A USACE permit would be required for the proposed Project and the Reduced Project Alternative in order to undertake the wharf work on Berth 408 at Pier 400 and for the pipeline crossing of the Dominguez Channel, which is defined as a navigable waterway under the River and Harbor Act. The USACE, the LAHD, and the applicant have concluded that no part of the proposed Project or the Reduced Project Alternative would be built absent a USACE permit. That determination is based on direct statements (including a letter from the applicant addressed to the USACE and LAHD) and empirical data from the applicant, as well as the judgment and experience of the USACE.

As described in Section 1.5.5.1, the No Federal Action Alternative and NEPA Baseline, which are equivalent on this project, are not bound by statute to a “flat” or “no growth” scenario; therefore, the USACE may project increases in operations over the life of a project to properly characterize the No Federal Action Alternative or NEPA Baseline condition. For this project, this is also equivalent to the No Project condition. In the case of the proposed Project, therefore, the No Federal Action Alternative/No Project (Section 2.5.2.1) is the environmental baseline for the purposes of analysis under NEPA. Conditions anticipated to occur under the No Federal Action/No Project Alternative represent a dynamic baseline that accounts for growth in crude oil imports to southern California, with the attendant impacts, that may occur without federal permits or other actions related to the proposed Project. Project-related resource effects are analyzed relative to this dynamic NEPA Baseline for particular project years to determine the increments of adverse or beneficial impact attributable to the NEPA action.

2.6.2 CEQA Baseline

The principles governing the selection of the CEQA Baseline are discussed in Section 1.5.5. In the case of evaluating the proposed Project and alternatives for this SEIS/SEIR, the baseline for determining the significance of potential impacts is June 2004, the date on which the NOP/IS was issued. The changes in resources affected by project-related activities are compared to the resource conditions that existed in June 2004, in order to determine the amount of adverse or beneficial impact. For resource areas where conditions at a single point in time are not adequate to describe the resource, such as air quality (see Section 3.2) and ground transportation/circulation (see Section 3.6), a running average of the conditions that occurred during the year-long period prior to the June 2004 NOP/IS date is used to provide a more representative estimate of the baseline condition. Once established, the CEQA Baseline remains constant for use in any analyses of impacts at different years throughout the lifetime of the Project.

2.7 Relationship to Existing Statutes, Plans, Policies, and Other Regulatory Requirements

One of the primary objectives of the NEPA/CEQA process is to ensure that the proposed Project is consistent with applicable statutes, plans, policies, and other regulatory requirements applicable to the proposed Project and alternatives. Table 2-16 lists existing statutes, plans, policies, and other regulatory requirements applicable to the proposed Project and alternatives. Additional analysis of plan consistency is contained in individual resource sections of Chapter 3 and, in particular, in Section 3.8 (Land Use).

Table 2-16. Applicable Statutes, Plans, Policies, and Other Regulatory Requirements

Applicable Statutes, Plans, Policies, and Other Regulatory Requirements	*Description*
FEDERAL	
Coastal Zone Management Act (CZMA)	Section 307 of the CZMA requires that all federal agencies with activities directly affecting the coastal zone, or with development projects within that zone, comply with the state coastal acts (in this case, the California Coastal Act of 1976) to ensure that those activities or projects are consistent, to the maximum extent practicable. The California Coastal Commission will use this SEIS/SEIR for Project approval; and USACE will use this approval as a demonstration that the Project is in compliance with the CZMA.
Biological Resources Protection	Endangered Species Act of 1973, as amended; Marine Mammal Protection Act; Migratory Bird Conservation Act; Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972; U.S. Fish and Wildlife Act of 1956 (16 USC 742a et seq.); Fish and Wildlife Coordination Act (16 USE 661 et seq.); Magnuson-Stevens Fishery Conservation and Management Act, as amended through 1996; Executive Order 13112, Invasive Species; Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 (P.L. 01-646), as amended by the National Invasive Species Act of 1996; Ballast Water Management for Control of Nonindigenous Species Act of 1999 (PRC Sections 71200-71271)
Cultural Resources Protection	National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 CFR 800); the Archaeological and Historical Preservation Act and Executive Order 11593 "Protection and Enhancement of the Cultural Environment." In compliance with federal laws, regulations, and other guidelines, USACE will use this SEIS/SEIR and resource evaluation studies to consult or coordinate with the California State Office of Historic Preservation (SHPO) regarding the determination that the proposed Project area may or may not affect cultural resources listed or eligible for listing on the National Register of Historic Places.
Air Quality Regulations	Clean Air Act, Title 40 CFR Parts 50 and 51 as amended; Prevention of Significant Deterioration, Titles 40 CFR Part 51.24 and 40 CFR Part 52.21.
Environmental Justice	Executive Order 12898 requires that "to the greatest extent practicable…each federal agency shall make achieving environmental justice part of its missions by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations." California adopted legislation addressing environmental justice in 1999 with the passage of Senate Bill (SB) 115 (Government Code Section 65040.12[c]), which established the Governor's Office of Planning and Research as the lead agency responsible for implementation of federal and state environmental justice policies in California. SB 115 defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws and policies." In 2000, the Governor signed the related SB 89 requiring that the Secretary for Environmental Protection convene a Working Group to assist California Environmental Protection Agency (CalEPA) in developing an environmental justice strategy.
Water Quality Regulations	The Rivers and Harbors Act of 1899, Section 10; federal Water Pollution Control Act (as amended by the Clean Water Act of 1977), Section 404; California Hazardous Waste Control Act; State Water Resources Control Board, Enclosed Bays and Estuaries Plan; Water Quality Control Plan for the Los Angeles River Basin (Region 4B), adopted by the Regional Water Quality Control Board, Los Angeles Region; Sections 401 and 402 of the Clean Water Act of 1977; and the Marine Protection, Research, and Sanctuaries Act of 1972, Section 103.
Transportation Regulations	Federal Highway Administration Guidelines; Federal Aid Highway Program Manual 7-7-3; USACE Regulation 1105-2-100; National Environmental Compliance, 91-190; U.S. Coast Guard Regulations Pertaining to Navigation Safety and Waterfront Facilities; NEPA of 1969 as Amended (Public Law 91-190).

Table 2-16. Applicable Statutes, Plans, Policies, and Other Regulatory Requirements (continued)

Applicable Statutes, Plans, Policies, and Other Regulatory Requirements	*Description*
STATE	
California Coastal Act of 1976	The Coastal Act (PRC Div. 20 Section 30700 *et seq.*) identifies the Port and its facilities as a "primary economic and coastal resources of the state, and an essential element of the national maritime industry (PRC Section 30701). The Port is responsible for modernizing and construction necessary facilities to accommodate deep-draft vessels and to accommodate the demands of foreign and domestic waterborne commerce and other traditional and water dependent and related facilities in order to preclude the necessity for developing new ports elsewhere in the state (Sections 30007.5 and 30701 (b)). The Act also establishes that the highest priority for any water or land area use within the jurisdiction of the Port shall be for developments which are completely dependent on such harbor water areas and/or harbor land areas for their operations (Sections 30001.5 (d), 30255 and 31260). The Coastal Act further provides that the Port should "Give highest priority to the use of existing land space within harbors for port purposes, including, but not limited to, navigational facilities, shipping industries, and necessary support and access facilities." (Section 30708 (c)) Under the California Coastal Act (Chapter 8), water areas may be diked, filled, or dredged when consistent with a certified port master plan only for specific purposes, including the following: (1) Construction, deepening, widening, lengthening, or maintenance of ship channel approaches, ship channels, turning basins, berthing areas, and facilities that are required for the safety and the accommodation of commerce and vessels to be served by port facilities; and (2) New or expanded facilities or waterfront land for port-related facilities.
California Coastal Plan	Under provisions of the California Coastal Act of 1976, the Port Master Plan (PMP) is incorporated into the Local Coastal Program of the City of Los Angeles. The PMP has been approved by the Los Angeles Board of Harbor Commissioners and has been certified by the California Coastal Commission (CCC). Under provisions of the California Coastal Act of 1976, the PMP is incorporated into the Local Coastal Program (LCP) of the City of Los Angeles. Therefore, if the proposed Project is consistent with the PMP, it would also be considered consistent with the LCP.
California Tidelands Trust Act, 1911	Submerged lands and tidelands within the Port, which are under the Common Law Public Trust, were legislatively granted to the City of Los Angeles pursuant to Chapter 656, Statutes of 1911 as amended. The Port jurisdictional properties are held in trust by the City and administered by the City's Harbor Department (i.e., LAHD) to promote and develop commerce, navigation and fisheries, and other uses of statewide interest and benefit, including but not limited to, commercial, industrial, and transportation uses, public buildings and public recreational facilities, wildlife habitat and open space. The Los Angeles Harbor Department will fund the Project with trust revenues. All property and improvements included in the Project would be dedicated to maritime-related uses and, therefore, would be dedicated to uses consistent with the Trust.
Water Quality Control Policy - Enclosed Bays and Estuaries of California	In 1974, the State Water Resources Control Board (SWRCB) adopted a water quality control policy that provides principles and guidelines to prevent degradation, and to protect the beneficial uses of waters of enclosed bays and estuaries (SWRCB 1974). Los Angeles Harbor is considered to be an enclosed bay under this policy. Activities, such as the discharge of effluent, thermal wastes, radiological waste, dredge materials, and other materials that adversely affect beneficial uses of the bay and estuarine waters are addressed. Waste discharge requirements developed by the LARWQCB, among other requirements, must be consistent with this policy.
California Toxics Rule	This rule, as found in 40 CFR Part 131, establishes numeric criteria for priority toxic pollutants in inland waters as well as enclosed bays and estuaries.
Global Warming Solutions Act (AB 32)	Passed in 2006, AB 32 requires that the State of California reduce its GHG emissions to 1990 levels by the year 2020 through the establishment of a statewide emissions cap achieved through regulations to be developed by the CARB.

Table 2-16. Applicable Statutes, Plans, Policies, and Other Regulatory Requirements (continued)

Applicable Statutes, Plans, Policies, and Other Regulatory Requirements	*Description*
STATE (CONTINUED)	
CARB Emission Reduction Plan for Ports and Goods Movement in California	The Plan seeks to reduce emissions from port activities by 60-80% (depending on the pollutant) by the year 2020 through the continuation of existing regulatory programs and the development and application of new regulations targeting oceangoing vessels (fuel standards, speed reduction, shore power), harbor craft (engine upgrades), cargo-handling equipment (exhaust controls), trucks (modernization program), and locomotives (exhaust controls, fuel standards, and alternative technologies). The Plan also emphasizes project-level mitigation measures to achieve emissions reduction and improve public health.
Air Quality Regulations	California Clean Air Act; Air Quality Management Plan of the City of Los Angeles General Plan, Air Quality Element; and South Coast Air Quality Management District (SCAQMD) Regulations IX (Standards of Performance for New Stationary Sources) and XIII (New Source Review) and Rules 201, 203, 403, 466, 1142, 1173, 1178, 1303, and 1306; AB 32 (Greenhouse Gas Regulation); the Congestion Management Plan; and the CARB Emission Reduction Plan for Ports and Goods Movement.
State Implementation Plan (SIP)	The federal Clean Air Act (CAA) and its subsequent amendments establish the National Ambient Air Quality Standards (NAAQS) and delegate the enforcement of these standards to the states. In areas that exceed the NAAQS, the CAA requires states to prepare a State Implementation Plan (SIP) that details how the NAAQS will be met within mandated time frames. The CAA identifies emission reduction goals and compliance dates based on the severity of the ambient air quality standard violation within an area.
Air Quality Management Plan (AQMP)	The United States Environmental Protection Agency (USEPA), under the provisions of the Clean Air Act, requires each state that has not attained the National Ambient Air Quality Standards (NAAQS) to prepare a separate local plan detailing how these standards would be met in each local area, and once met, how they would be maintained. These Air Quality Attainment or Management Plans (AQAP or AQMP) are prepared by local agencies designated by the governor of each state to be incorporated into a State Implementation Plan (SIP). The Lewis Air Quality Act of 1976 established the four-county SCAQMD and mandated a planning process requiring preparation of an Air Quality Management Plan (AQMP). Every 3 years, SCAQMD prepares an overall plan for air quality improvement. Each iteration of the plan is an update of the previous plan and has a 20-year horizon. The 2007 AQMP was adopted by the SCAQMD Governing Board on June 1, 2007. The 2007 AQMP updates the attainment demonstration for the federal standards for ozone and particulate matter with a diameter of less than 10 micrometers (PM_{10}), provides a basis for a maintenance plan for the federal carbon monoxide (CO) standard for the future, and updates the maintenance plan for the federal nitrogen dioxide (NO_2) standard that SCAB has achieved since 1992. This 2007 revision to the AQMP addresses several state and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP is consistent with, and builds upon, the approaches taken in the prior AQMP and amendments to the Ozone SIP for SCAB attainment of the federal ozone air quality standard. This revision points to the urgent need for additional emission reductions beyond those incorporated in the 2003 Plan from all sources, specifically those under the jurisdiction of the CARB and USEPA, which account for approximately 80 percent of the ozone precursor emissions in the basin.
Transportation Regulations and Policies	California Public Utilities Commission Guidelines; California Transportation Guidelines; California Administrative Code Section 65302 (f)-Noise Element.

Table 2-16. Applicable Statutes, Plans, Policies, and Other Regulatory Requirements (continued)

Applicable Statutes, Plans, Policies, and Other Regulatory Requirements	*Description*
LOCAL	
Southern California Association of Governments (SCAG) Regional Plans	SCAG is responsible for developing regional plans for transportation management, growth, and land use, as well as developing the growth factors used in forecasting air emissions within the South Coast Air Basin. SCAG has developed a Regional Comprehensive Plan and Guide (RCPG), the 2004 Regional Transportation Plan (RTP) and, in cooperation with SCAQMD, the AQMP. The Project would not generate population migration into the area or create a demand for new housing units. As a result, it would be consistent with the RCPG and the Regional Housing Needs Assessment.
Water Quality Control Plan - Los Angeles River Basin	The *Water Quality Control Plan for the Los Angeles River Basin (Region 4)* (Basin Plan) was adopted by the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) in 1978 and updated in 1994 (LARWQCB 1994). The Basin Plan designates beneficial uses of water resources in the basin. The Basin Plan describes water quality objectives, implementation plans, and surveillance programs to protect or restore designated beneficial uses. The proposed Project would be permitted by the LARWQCB and operated in conformance with objectives of the Water Quality Control Plan.
City of Los Angeles: Port of Los Angeles Plan	The Port of Los Angeles Plan is part of the *General Plan of the City of Los Angeles* (General Plan) (City of Los Angeles 1982). This plan provides a 20-year official guide to the continued development and operation of the Port. It is designed to be consistent with the PMP. The long-range preferred water and land uses for the Port include non-hazardous liquid and non-hazardous dry bulk cargo, general cargo, commercial fishing operations, and Port-related commercial and industrial uses. However, these preferred goals are subject to the following criteria: changes in economic conditions that affect the types of commodities traded in waterborne commerce; the economic life of existing facilities handling or storing hazardous cargo; and precautions deemed necessary to maintain national security (LAHD 2006).
Port of Los Angeles Master Plan (PMP) and PMP Roadmap	**Port Master Plan.** The PMP (LAHD 2006) provides for the development, expansion, and alteration of the Port, in both short-term and long-term periods, for commerce, navigation, fisheries, Port-dependent activities, and general public recreation. Those objectives are consistent with the provisions of the California Coastal Act (1976), the Charter of the City of Los Angeles, and applicable federal, state, and municipal laws and regulations. The proposed Project land uses would be consistent with those prescribed by the PMP as discussed in Section 3.8. **Roadmap.** The PMP is mandated by the California Coastal Act and provides for the development, expansion, and alteration of the Port, in both short-term and long-term periods, for commerce, navigation, fisheries, Port-dependent activities, and general public recreation. The PMP is also the planning document on which to base all project-specific CEQA documents. The PMP is undergoing comprehensive update. The Port expects to begin working its Strategic Plan update first. The port would first begin a comprehensive outreach effort before beginning the actual update. Based on stakeholder feedback, Port-wide studies, growth projections and Port Policy, a draft plan will be crafted, which will then be analyzed under CEQA through an EIR. After CEQA review, the plan will then be finalized. The entire process is expected to take approximately 2½ to 3 years.
San Pedro Bay Ports Clean Air Action Plan (CAAP)	The CAAP is a joint program of the ports of Los Angeles and Long Beach to achieve accelerated emissions reductions from port activities through a combination of measures targeting ships, trucks, trains, and terminal operations. The measures will be imposed through a combination of tariff provisions, lease requirements, incentive programs, and CEQA mitigation requirements. Details of the CAAP are provided in Section 1.6 and Section 3.2.
Greenhouse Gas (GHG) Inventory	In response to a proposal by the Attorney General of the State of California, the Port has agreed to conduct an inventory of greenhouse gas emissions from port activities.
Port of Los Angeles Leasing Policy	The Port Leasing Policy sets forth requirements for tenants regarding environmental protection and emissions reductions. (See Appendix E, Section E.6, for details of specific provisions from the Port Leasing Policy that would apply to this proposed Project.)

Table 2-16. Applicable Statutes, Plans, Policies, and Other Regulatory Requirements (continued)

Applicable Statutes, Plans, Policies, and Other Regulatory Requirements	*Description*
LOCAL (CONTINUED)	
Port of Los Angeles Risk Management Plan (RMP)	The RMP, an amendment to the PMP, was adopted in 1983, per requirements of the CCC. The purpose of the RMP is to provide siting criteria relative to vulnerable resources and the handling and storage of potentially hazardous cargo such as crude oil, petroleum products, and chemicals. The RMP provides guidance for future development of the Port to minimize or eliminate the hazards to vulnerable resources from accidental releases (LAHD 1983). Upon concurrence with these findings by the Los Angeles Fire Department, and implementation of, and adherence to, the physical and operational characteristics described in project applications, leases, and environmental documents, a proposed project would be consistent with the RMP. This consistency is achieved through physical separation of facilities and materials, as well as facility design factors, safety barriers, fire protection, and other risk mitigation measures.
City of Los Angeles: Wilmington-Harbor City Community Plan	The *Wilmington-Harbor City Community Plan* (City of Los Angeles 1999b) is a part of the General Plan and provides an official guide to future development. The Project is located in an area south of Wilmington-Harbor City. Although the Community Plan does not include the Project area, the plan recommends integrating future development of the Port with the Wilmington community, including Port changes and land acquisitions. The plan also recommends interagency coordination in the planning and implementation of Port projects to facilitate efficiency in Port operations, and to serve the interests of the adjacent communities.
City of Los Angeles: San Pedro Community Plan	The *San Pedro Community Plan* (City of Los Angeles 1999a) is a part of the General Plan and provides an official guide to maintain the individuality of that community. The Project is located in an area east of San Pedro. Although the Community Plan does not include the Project area, the plan seeks to coordinate harbor related land uses and circulation systems at the Port with those of adjoining areas by providing adequate buffers and transitional uses between the harbor and the rest of the Community. To achieve this goal, the plan recommends developing an integrated relationship with the Port to improve the vitality of downtown San Pedro, World Cruise facilities, and Ports O' Call, coordinating with the Port for development of industrial space and activity, relocating hazardous uses away from the community, and improving vehicular access to the Port via the West Basin.
City of Los Angeles General Plan - Air Quality Element	The City of Los Angeles General Plan has an Air Quality Element (City of Los Angeles 1992) that contains general goals, objectives, and policies related to improving air quality in the region. Policy 5.1.1 relates directly to the Port and requires improvements in harbor operations and facilities to reduce emissions. The LAHD is actively planning for and implementing such improvements (see Section 1.6 of this document).