1

INTRODUCTION

1.1 Final SEIS/SEIR Organization

This chapter presents background and introductory information for the Proposed Pacific Los Angeles Marine Terminal Crude Oil Marine Terminal, Tank Farm Facilities, and Pipelines Project (proposed Project), located on Berth 408 of Pier 400 (marine terminal, Tank Farm 1, and pipelines) and Pier 300 (Tank Farm 2 and pipelines) in the Port of Los Angeles ("Port"). This chapter presents a summary of the project's history; the authorities of the Lead Agencies (United States Army Corps of Engineers [USACE] and the Los Angeles Harbor Department [LAHD]) in preparing this Final Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR); a description of the proposed Project, incorporating the editorial changes noted in the "Response to Comments" and other minor corrections; the scope and content of the SEIS/SEIR; the key principles guiding the preparation of this document; and major Port environmental initiatives that could influence the proposed Project or its alternatives. Additionally, this chapter discusses general changes and modifications made to the Draft SEIS/SEIR.

Chapter 2, Responses to Comments, presents information regarding the distribution of, and public comments on, the Draft SEIS/SEIR, and the responses to public comments. Chapter 3 presents the modifications to the Draft SEIS/SEIR. This includes revisions to impacts analyses (Environmental and Cumulative), Comparison of Alternatives, Socioeconomics and Environmental Quality, Growth-Inducing Impacts, and Significant Irreversible Changes. There are also revisions to the References section, Acronyms and Abbreviations, and several Appendices. Section 1.4 in this chapter provides a list of the sections and appendices of the Draft SEIS/SEIR that have been modified.

This Final SEIS/SEIR has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4341 et seq.), and in conformance with the Council on Environmental Quality (CEQ) Guidelines (40 Code of Federal Regulations [CFR] 1500 et seq.) and the USACE NEPA Implementing Regulations (33 CFR 230 et seq.). The document also fulfills the requirements of the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] 21000 et seq.), and the CEQA Guidelines (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3, Sections 15000 et seq.). The USACE is the NEPA lead agency for this proposed Project, and the LAHD is the CEQA lead agency.

1.2 Project Background

1.2.1 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, NEPA and 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.

1.2.1.1 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 on Pier 400 (Tank Farm Site 1) and Pier 300 (Tank Farm Site 2) 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 1-1). 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 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 feet 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 of the Draft SEIS/SEIR). 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.

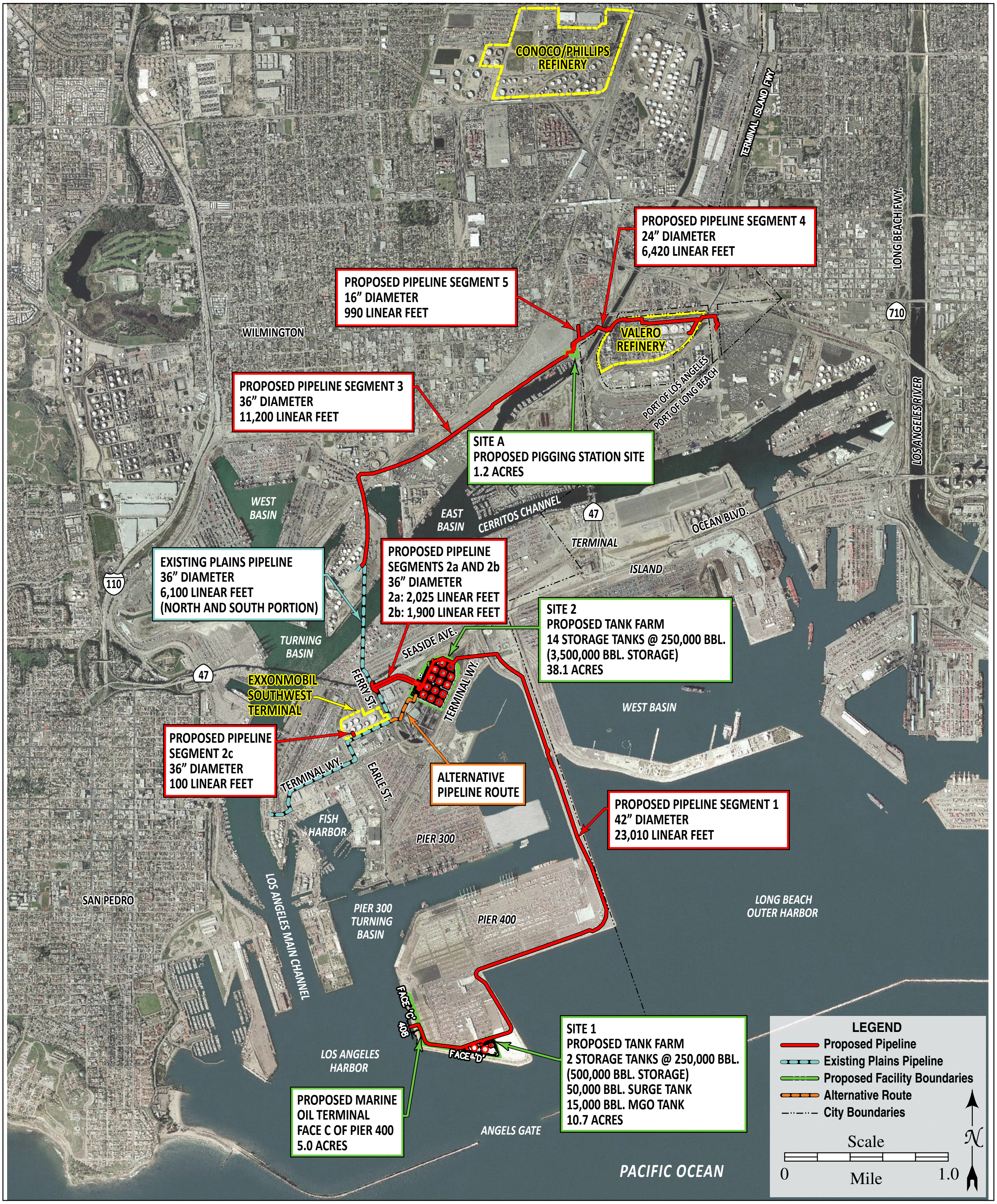

Figure 1-1. Proposed Project Site Locations (Aerial View)

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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.

1.2.1.2 Proposed Project Throughput Comparison

Table 1-1 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) of the Draft SEIS/SEIR since, as explained in Section 1.5.5.1 and Section 2.6 of the Draft SEIS/SEIR, 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 of the Draft SEIS/SEIR. Appendix D1 provides details regarding the analyses supporting the throughput and vessel mix estimates used in this document.

Table 1-1. Proposed Project Land and 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	48.8 acres (19.7 ha)	48.8 acres (19.7 ha)	48.8 acres (19.7 ha)	48.8 acres (19.7 ha)
Acreage for Administration Building near Tank Farm Site 2	0	1.1 acres (0.45 ha)	1.1 acres (0.45 ha)	1.1 acres (0.45 ha)	1.1 acres (0.45 ha)
Pig Launching Facility (Site A)	0	1.2 acres (0.5 ha)	1.2 acres (0.5 ha)	1.2 acres (0.5 ha)	1.2 acres (0.5 ha)
Alternate Pig Launching Facility (Site B)	0	0.61 acres (0.25 ha)	0.61 acres (0.25 ha)	0.61 acres (0.25 ha)	0.61 acres (0.25 ha)
Total Project Acreage[2]	0	55.5 - 56.1 acres (22.5 - 22.7 ha)	55.5 - 56.1 acres (22.5 - 22.7 ha)	55.5 - 56.1 acres (22.5 - 22.7 ha)	55.5 - 56.1 acres (22.5 - 22.7 ha)
Tanker Calls	0	129 per year [3]	147 per year [3]	201 per year [3]	201 per year [3]
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 [4]	48 [5]	54 [5]	54 [5]

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) of the Draft SEIS/SEIR since, as explained in Section 1.5.5.1 and Section 2.6 of the Draft SEIS/SEIR, the NEPA Baseline is identical to the No Federal Action/No Project Alternative for this analysis.
2. Total acreage would vary slightly depending on the location of the pig launching facility. See Section 1.2.2.3.3 for details.
3. 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).
4. 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 1.2.4.3.1 for details. This peak level would occur for only a brief time period, if at all, but is the highest reasonably foreseeable number.
5. 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.

1.2.1.3 Overview of Crude Oil Demand and Supply in Southern California

Crude oil in California is used predominantly to make transportation fuels for consumers and businesses; no electricity in the state is generated using petroleum (CEC 2007a). As the California Energy Commission (CEC) states in the 2007 Integrated Energy Policy Report (IEPR) (CEC 2007a), "Californians require mobility to conduct their everyday lives and attend to their business needs. For the most part, this mobility is achieved through use of a petroleum-fueled vehicle. Travel demand is essentially a fixed requirement for individual consumers of transportation goods and services in a state as physically expansive as California, where distances are large and most metropolitan areas are extensive and poorly served by public transit. Reducing public access to work, recreation, and other travel cannot be achieved without disruption and economic loss. Moreover, population growth translates directly into increases in aggregate travel demand."

Even as consumers demand mobility, California leads the nation in environmental policies and initiatives to reduce energy consumption and increase the use of alternative fuels. California Assembly Bill (AB) 1007 (Pavley, Chapter 371, Statutes of 2005) directed the CEC, in partnership with the California Air Resources Board (CARB), to develop a State Alternative Fuels Plan to increase the use of alternative fuels without adversely affecting air pollution, water pollution, and public health. Released in December 2007, the State Alternative Fuels Plan (CEC and CARB 2007) recommends a combination of regulations, incentives, and market investments to achieve increased penetration of alternative and non-petroleum fuels. The State Alternative Fuels Plan describes strategies, actions, and mechanisms to concurrently address multiple state policies (petroleum reduction, greenhouse gas (GHG) reduction, in-state biofuels production and use goals, and state air quality goals) in an integrated fashion. To accomplish the goal, the plan recommends multiple strategies which combine private capital investment, financial incentives, and technology advancement approaches.

However, even with full implementation of the State Alternative Fuels Plan, 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 2007a). 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 2007a). 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 (see Section 1.2.1.3.3 for details).

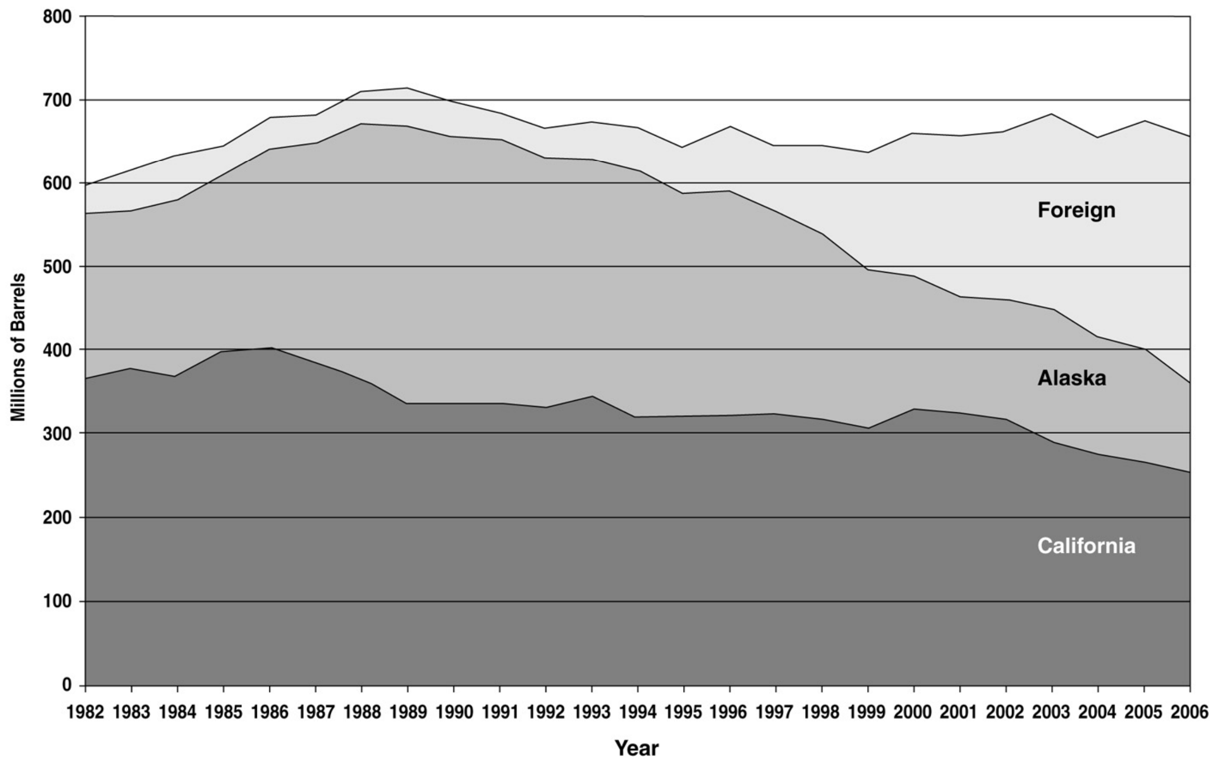
Petroleum based fuels are and will continue to be a necessary part of California's energy portfolio. In the 2007 IEPR (CEC 2007a; CEC 2007b) the CEC recommends that California continue with improving critical petroleum product import infrastructure, particularly for crude oil, as well as related storage and onshore transportation facilities. The proposed Project directly addresses part of this stated need. Expanding petroleum related infrastructure is critical to meet California's transportation fuel needs, even with pursuing aggressive strategies to use alternative fuels and reduce demand for all transportation fuels (CEC 2007a; CEC 2007b).

The demand for crude oil in southern California is driven by consumer demand for transportation fuels: gasoline, diesel, and jet fuel. About 79 percent of California's refinery output in 2006 consisted of these fuels (the remainder of refinery output includes heavier and lighter components such as petroleum coke, refinery gases, asphalt, and tar) (CEC 2007c). Demand for transportation fuels is, in turn, a function of several factors, including population, income, vehicle purchasing and driving habits, fuel prices, rates of adoption of new technologies and alternative fuels, and GHG reduction rules and standards. In addition to supplying southern California's transportation fuel needs, the refineries operating in southern California also supply virtually 100 percent of transportation fuels for Nevada and 60 percent for Arizona (CEC 2007a).

In 2005, California refineries processed 674 million barrels (bbl) of crude oil (1.8 million barrels per day [bpd]). Crude oil from foreign imports made up the largest share of that amount (40.4 percent); California sources supplied 39.5 percent, and Alaska North Slope (ANS) supplied 20.2 percent (CEC 2007c). Within southern California, refineries processed 356 million bbl in 2005 (975 thousand bpd); 52 percent of this supply was from foreign imports, 34 percent was from California sources, and 14 percent was from ANS (Baker & O'Brien 2007). However, crude production from California and Alaska (as well as the rest of the U.S.) is decreasing. California crude production peaked in 1985 and has declined by 39 percent since 1986; Alaskan crude production peaked in 1988 and has declined 60 percent since that time (Figure 1-2). These declines are expected to continue, as shown in Figure 1-3 (Baker and O'Brien 2007; CEC 2007a; CEC 2007b; CEC 2007c).

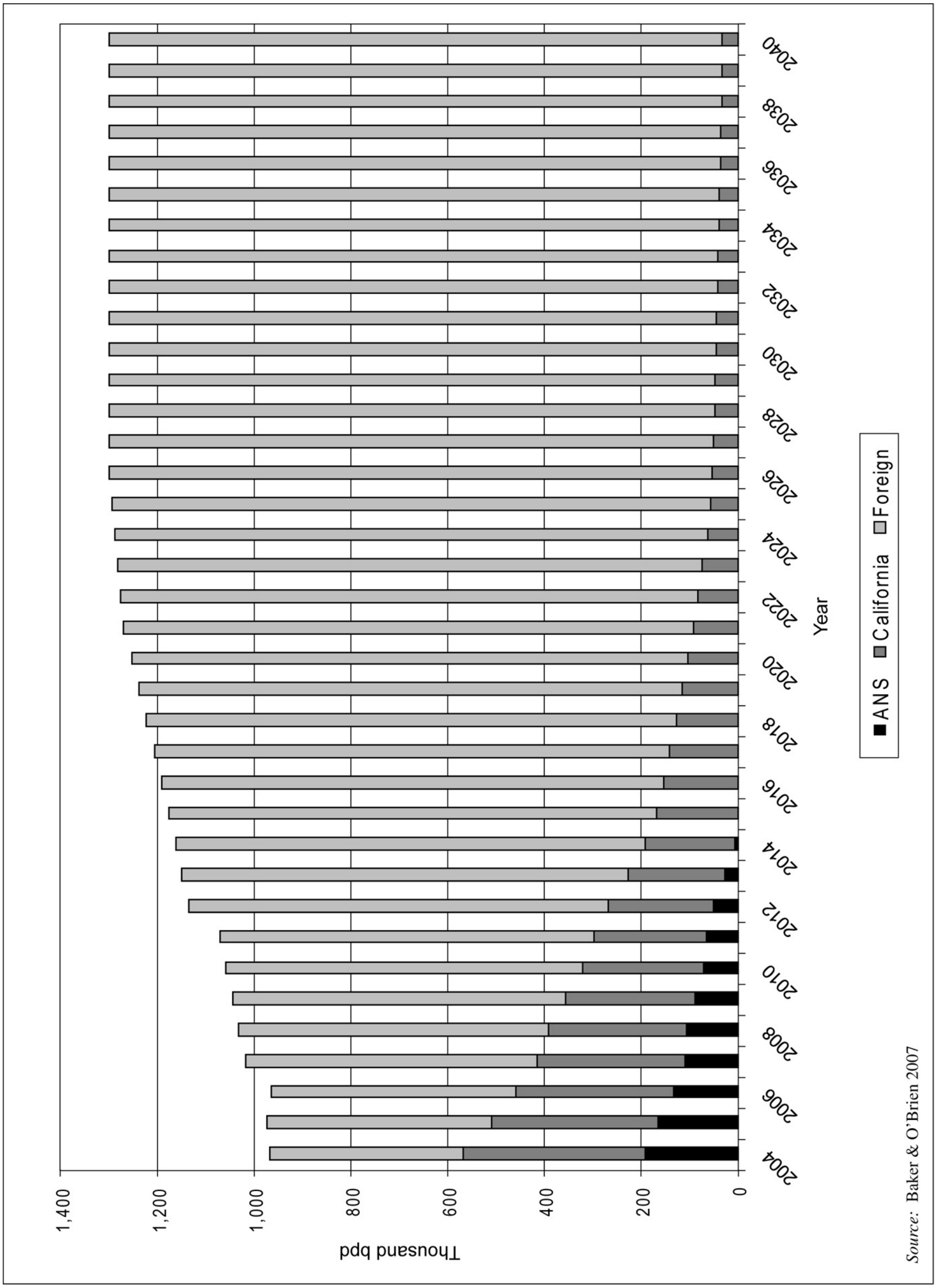
With the decline in domestic production has come an increase in foreign imports, which arrive in the Los Angeles area after being transported via tanker vessels. Table 1-2 summarizes the five recognized size classes of tanker vessels in long-haul (i.e., trans-oceanic) service. Typically, the company that owns the vessel does not own the crude oil it carries; companies involved in the business of transporting crude contract with ship owners to transport oil from producing regions to consuming regions.

In 2005, about 45 percent of foreign crude oil imports to southern California came from the Middle East (i.e., Saudi Arabia, Iraq, Yemen, Oman, and Kuwait), and another 46 percent came from Central and South America. About 7 percent came from West Africa, and about 2 percent came from Canada. The share of Middle Eastern imports has increased steadily in recent years, a trend that is expected to continue (Baker & O'Brien 2007). Middle East imports generally arrive in VLCCs and Suezmax vessels because larger vessels are more cost effective for longer voyages than smaller vessels. However, as no crude oil terminals in Southern California are capable of accommodating a fully loaded VLCC due to wharf and water depth restrictions, fully loaded VLCCs must currently offload crude oil onto smaller vessels to transfer to the receiving terminal, a process called lightering (described in detail below). Latin American and Canadian oil transported to southern California is generally carried via Aframax tankers, while crude originating in West Africa is usually shipped to southern California in Aframax and Suezmax vessels. Panamax vessels also carry crude oil into southern California; they mainly come from relatively close suppliers (e.g., Ecuador) and supply oil for the spot market.



Source: CEC 2007b

Figure 1-2. Crude Oil Supply Sources to California Refineries



Source: Baker & O'Brien 2007

Figure 1-3. Projected Future Crude Oil Supply Sources for Southern California

Table 1-2. Classes and Characteristics of Oil Tankers				
Vessel Type	*Length (ft)*	*Capacity (DWT)*[1]	*Average Capacity (bbl)*[1]	*Draft (ft)*
Panamax: The largest tanker that can travel through the Panama Canal.	726 - 797 (761 average)	60,000 - 70,000	350,000	38 - 45
Aframax: Tankers using the AFRA (Average Freight Rate Assessment) method to calculate transportation costs.	700 - 840 (797 average)	70,000 - 120,000	700,000	38 - 57
Suezmax: The largest tanker that can travel through the Suez Canal.	817 - 952 (896 average)	120,000 - 200,000	1,000,000	48 - 61
Very Large Crude Carrier (VLCC)	1,037 - 1,128 (1,091 average)	200,000 - 325,000	2,000,000	62 - 75
Ultra Large Crude Carrier (ULCC)	up to 1,500	325,000 - 550,000	4,000,000	up to 90

Sources: Hayes 2005; PLAMT 2007.
Note:
1. DWT (deadweight tons) measure the capacity for cargo; one DWT equals 2,240 pounds (one long ton). bbl = barrels (one barrel = 44 U.S. gallons).

The limited depths at existing berths force many larger vessels to be lightered offshore. This process consists of the large vessel ("lightered vessel") transferring a portion of its cargo to a smaller vessel ("lightering vessel"). The lightering vessel comes from the port empty, picks up cargo from the lightered vessel, returns to port to offload its cargo, then returns to the lightered vessel for another load; the lightered vessel may or may not come into port. In southern California, the transfer of cargo from the lightered to lightering vessel occurs approximately 25 to 100 miles (40 to 160 km) offshore; and for safety and stability, both vessels remain unanchored and moving under their own power while the transfer of cargo occurs. The lightering process results in a larger number of smaller vessels calling at San Pedro Bay than would be required if channel/berth depths allowed larger vessels to call at existing berths.

Currently five terminals close to Los Angeles (Figure 1-4 and Figure 1-5; Table 1-3) are capable of receiving crude oil: Berths 76-78, 84-87, and 121 in the Port of Long Beach, Berths 238-240 in the Port of Los Angeles, and an offshore mooring facility off the coast of El Segundo in Santa Monica Bay. Outside of these facilities, the nearest U.S. terminals capable of receiving crude oil tankers are at the Port of Hueneme (Ventura County) and the San Francisco Bay Area. However, the Port of Hueneme can accommodate only barges, not tanker vessels, and is primarily designed to receive crude oil from offshore platforms. Oil arriving into the San Francisco Bay Area is refined within the area, and refineries in the Bay Area supply products to northern California, northern Nevada, and Oregon, including approximately 35 percent of Oregon's refined products (CEC 2007a). In addition, the Bay Area petroleum import infrastructure is also at or near capacity, and the maximum depth at berth available to tanker vessels is 50 feet

(CEC 2005). Crude oil pipelines currently transport California crude oil from the San Joaquin Valley to the San Francisco Bay area and the Los Angeles Basin, but no pipelines transport crude oil into California from neighboring states or from Mexico.

1.2.1.3.1 Oil Supply and Demand

As described above, Californians require mobility to conduct their everyday lives and attend to their business needs (CEC 2007a). 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.

In 1982, California received 61 percent of its crude oil supplies from in-state production, 33 percent from the Alaska North Slope (ANS), and 6 percent from foreign sources. By 2006, the situation had changed, with in-state production making up 39 percent of crude oil processed by California refineries, ANS representing 16 percent, and foreign sources contributing 45 percent (CEC 2007d). In addition, due to the limited refining capacity in California, the state must import ten percent of its refined blending components and finished gasoline and diesel to meet the growing demand (CEC 2007a).

The determinants of consumer demand for transportation fuels include population growth, real income growth, vehicle miles traveled (VMT), market penetration of hybrid and alternative-fuel vehicles, and the number of on-road registered vehicles in California, among other elements. The California Department of Finance (DOF) predicts that California's population and real per capita income will grow by a little over 1 percent per year. More than 37 million people live in California; the population is expected to grow to more than 44 million by 2020 and the population may increase to about 60 million residents by 2050 (CEC 2007a, CEC 2007b, CEC 2007c). From 2001 to 2005 the number of vehicles registered on California roads increased by about 3 percent per year. Among the types of on-road vehicles, growth was fastest for hybrid vehicles, nearly doubling every year; however, as of 2005 hybrids were still a small proportion, just 0.3 percent, of on-road registered vehicles (CEC 2007c). The CEC transportation fuel demand model projects that VMT and the number of on-road registered vehicles in California will continue to increase through 2030, even under conservative assumptions about greenhouse gas (GHG) regulations and high fuel prices. The CEC predicts that demand for on-road gasoline could decrease depending on GHG regulations and fuel prices; however, it predicts that demand for diesel and jet fuel will increase regardless of GHG regulations and fuel prices, resulting in a net increase in overall demand for transportation fuels within California (ranging from 0.51 percent per year with high fuel prices and GHG regulations, to 1.43 percent per year with low fuel prices and no GHG regulations; CEC 2007c). (Appendix D1 provides additional details about transportation fuel demand predictions, including how recent GHG regulations are incorporated into demand projections.)

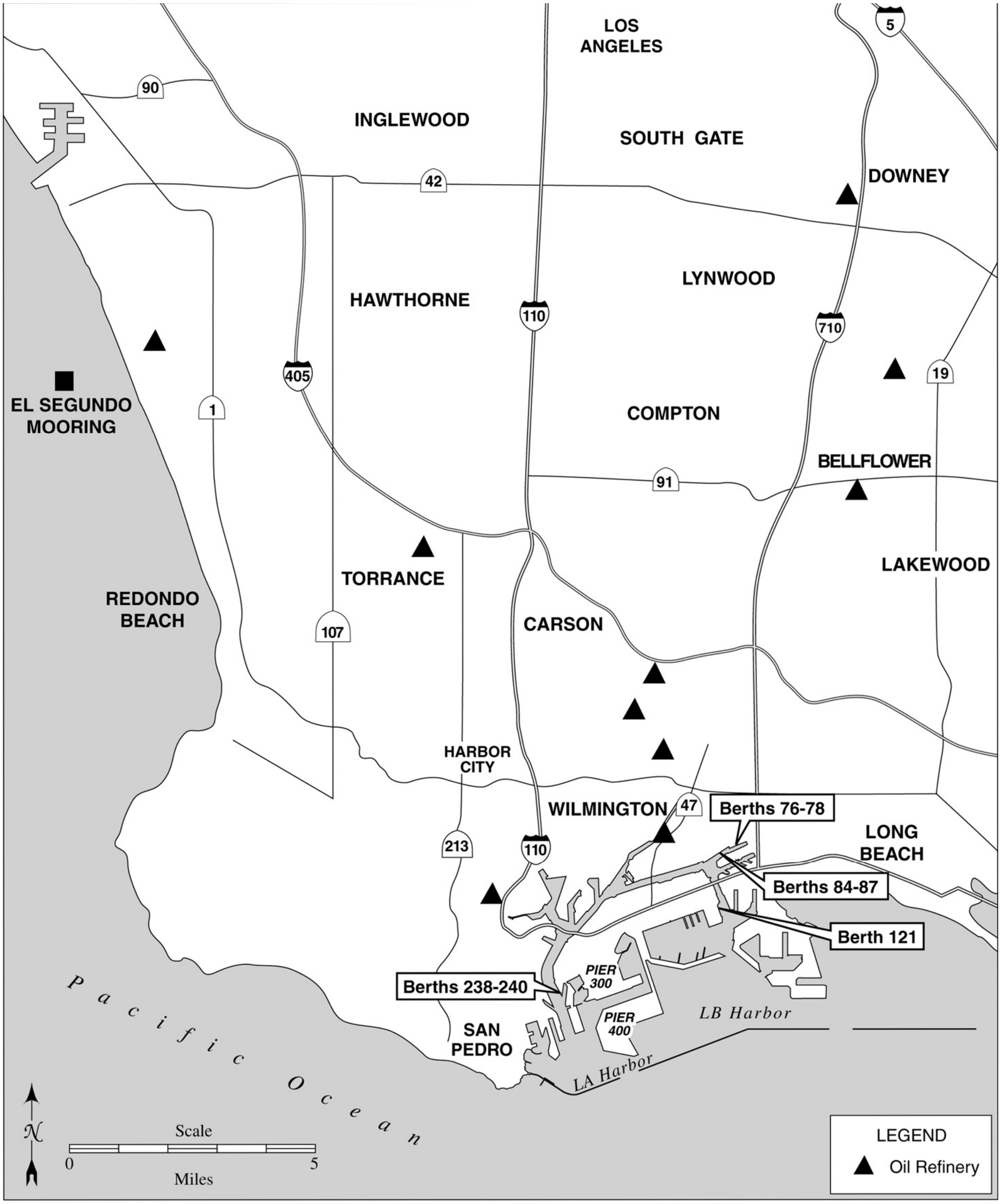


Figure 1-4. Petroleum Infrastructure in the Los Angeles Basin

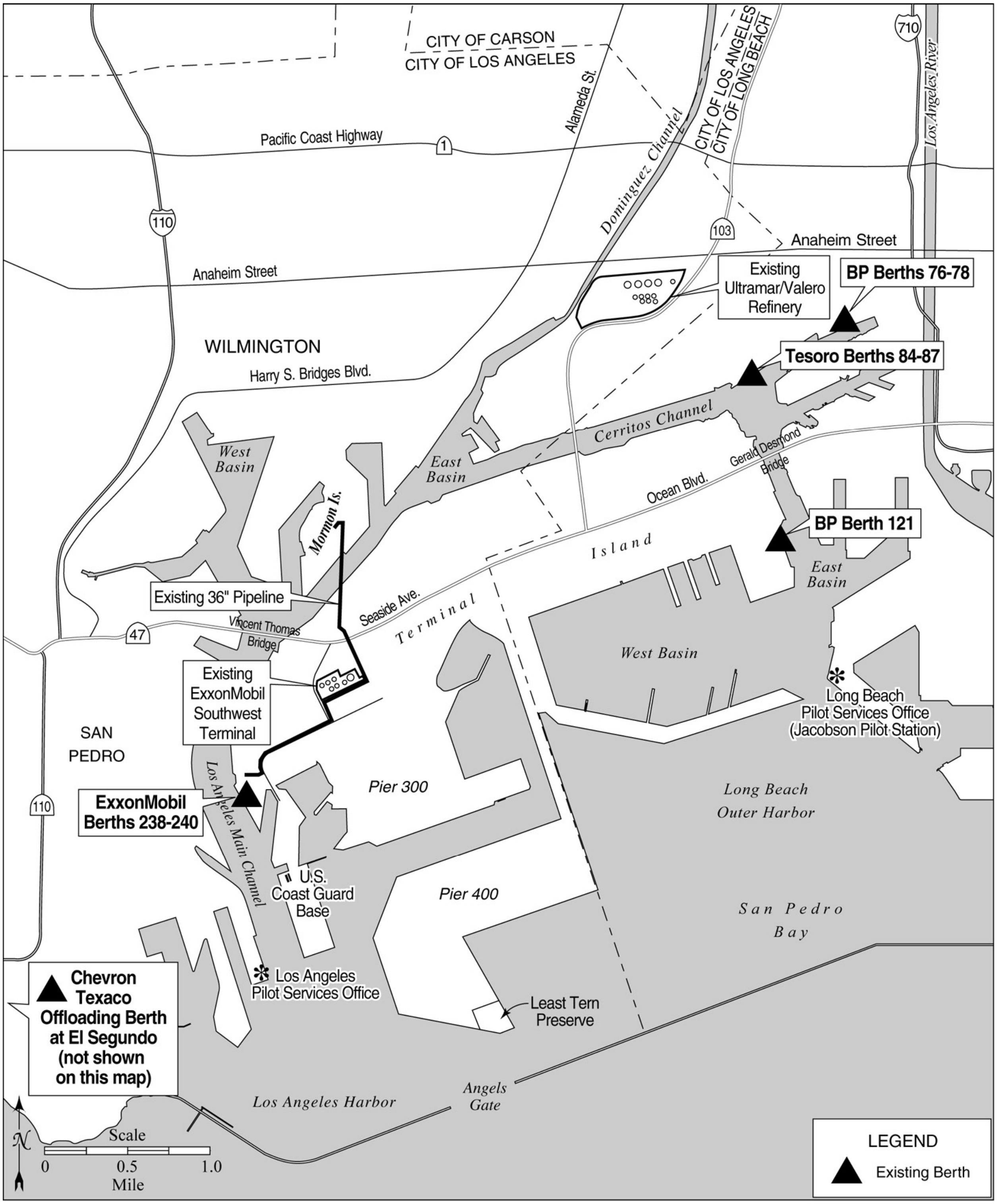


Figure 1-5. Active Crude Oil Offloading Berths, Ports of Los Angeles and Long Beach

Table 1-3. Existing Crude Oil Berths Near Los Angeles Basin

Parameter	*LAHD 238-240*	*POLB 76-78*	*POLB 84-87*	*POLB 121*	*El Segundo Mooring*
Crude oil discharged in 2004 (million bbl)	0	10	20	124	56
Average vessel calls per month	5-6	20-25	10-18	20	16-18
Maximum length of docking vessel (ft)	750	900	1,000	1,225	1,000
Maximum depth below MLLW (ft)	37	42	45	76	56
Highest capacity tanker vessel (DWT)	70,000	150,000	130,000	265,000	150,000
Estimated highest capacity tanker vessel (bbl)1	540,000	1,160,000	1,000,000	2,100,000	1,200,000
Year Built (latest major construction)	1922	1929 (1954)	1967	1982	1962 (1992)
Structural Assessment by CSLC2	Poor	Good	Good	Good	Good
Primary Wharf Material	wood	n/a	concrete, wood	n/a	n/a
Operator	ExxonMobil	BP	Tesoro	BP	Chevron

Sources: CSLC 2007a, 2007b, 2007c, 2007d, 2007e, 2007f; Port of Long Beach 2007.

Notes:

POLB = Port of Long Beach

LAHD = Port of Los Angeles

n/a = Not available

1. Estimated capacity of tanker vessels in bbl is based on converting DWT to bbl for light crude (API gravity of 40 degrees) (i.e., 7.75 bbl per DWT).
2. CSLC recently assessed the structural integrity of California marine oil terminals as part of development of its new Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS). The assessment is based on an inspection of conditions above the water line only. "Good" indicates that the structure appears to be in good condition and generally fit-for-purpose. "Fair" indicates the structure is probably fit-for-purpose, but upgrades would probably be required to protect the public health, safety and the environment. "Poor" indicates that the structure is probably not fit-for-purpose and will require major structural upgrades to facilitate the vessels currently calling at the wharf/pier (CSLC 2007g).

With consumer demand for transportation fuels exceeding the capacity of refineries to produce those fuels – as stated above, the state currently imports ten percent of its refined blending components and finished gasoline and diesel to meet consumer demand (CEC 2007a) – California's petroleum refineries continue to expand their distillation capacity (i.e., the amount of crude oil they are able to refine) as part of the normal process of doing business. This phenomenon, called "refinery capacity creep," occurs as refineries make process improvements in order to expand the capacity of their crude oil distillation equipment (provided the expansion meets environmental guidelines and permitting requirements, and if it can be justified as having a sufficient economic return) (CEC 2007b). Refinery capacity creep is a worldwide phenomenon: refinery capacity creep worldwide has averaged 1.4 percent per year since 1996; in the U.S., it has averaged about 1.3 percent. Compared to the rest of the U.S. and the world, refinery capacity creep in California has been relatively low in recent years, averaging 0.5 percent per year since 1996 (CEC 2007b).

Since consumer demand for transportation fuels exceeds the capacity of refineries to produce them, both statewide and in southern California specifically, the demand for marine crude oil deliveries to southern California is essentially a function of two factors: 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 assume a relatively high refinery capacity creep in early years, with lower refinery capacity creep in later years (1.25 percent per year through 2021, 0.50 percent per year for 2022-2026, and no change after 2026). In addition, the Baker & O'Brien (2007) forecast takes into account an expected increase in refinery capacity in 2012 due to a planned refinery expansion. This represents an additional gain of 50,000 bpd of refinery capacity. Baker & O'Brien assume California production will decline at about 3.5 percent per year. Based on these assumptions, Baker & O'Brien estimate that by 2040, the demand for marine crude oil deliveries in southern California will increase by 677,000 bpd compared to 2004. Figure 1–6 provides a graphical summary of the Baker & O'Brien projection.

1.2.1.3.2 Trend toward Larger Vessels

Because no pipelines carry crude oil into California, by far the best method to deliver imported crude (including ANS crude) is by marine tanker vessels. (Theoretically, crude could be carried in rail cars or trucks, but in practice this would be cost prohibitive and would also result in greater environmental impacts; this issue is addressed further in Appendix D3.) Companies prefer to use larger vessels for crude oil imports wherever possible, for two reasons. First, there are economies of scale for long-haul voyages such as from the Middle East. Second, since larger vessels generally have higher offload rates, large vessels at deep-water berths can offload more crude oil in a given period than small vessels at shallower berths. For example, a 65,000 DWT marine vessel that draws 42 feet (12.8 meters [m]) of water depth fully laden would carry a cargo of 420,000 bbl (Table 1-2) and offload its cargo in approximately 24 hours. A vessel of that size could be handled at any of the liquid bulk berths in the two ports. A 325,000 DWT VLCC tanker that draws 74 feet (22.5 m) of water fully laden could carry a cargo of up to about 2.3 million bbl (depending on the characteristics of the oil), and the applicant represents that such a vessel could offload its cargo in about 28 to 30 hours (no operating berth in the San Pedro Bay ports can currently accommodate a vessel drawing that much water, however). Based on these estimates, it would take five smaller vessels a total of nearly five days to offload the same quantity of crude oil that a large vessel would offload in a little more than one day. In addition, it is worthwhile to note that larger tanker vessels burn less fuel per barrel of oil they carry, which means that they result in fewer vessel emissions per barrel delivered. (Section 3.2 Air Quality addresses vessel emissions in more detail.)

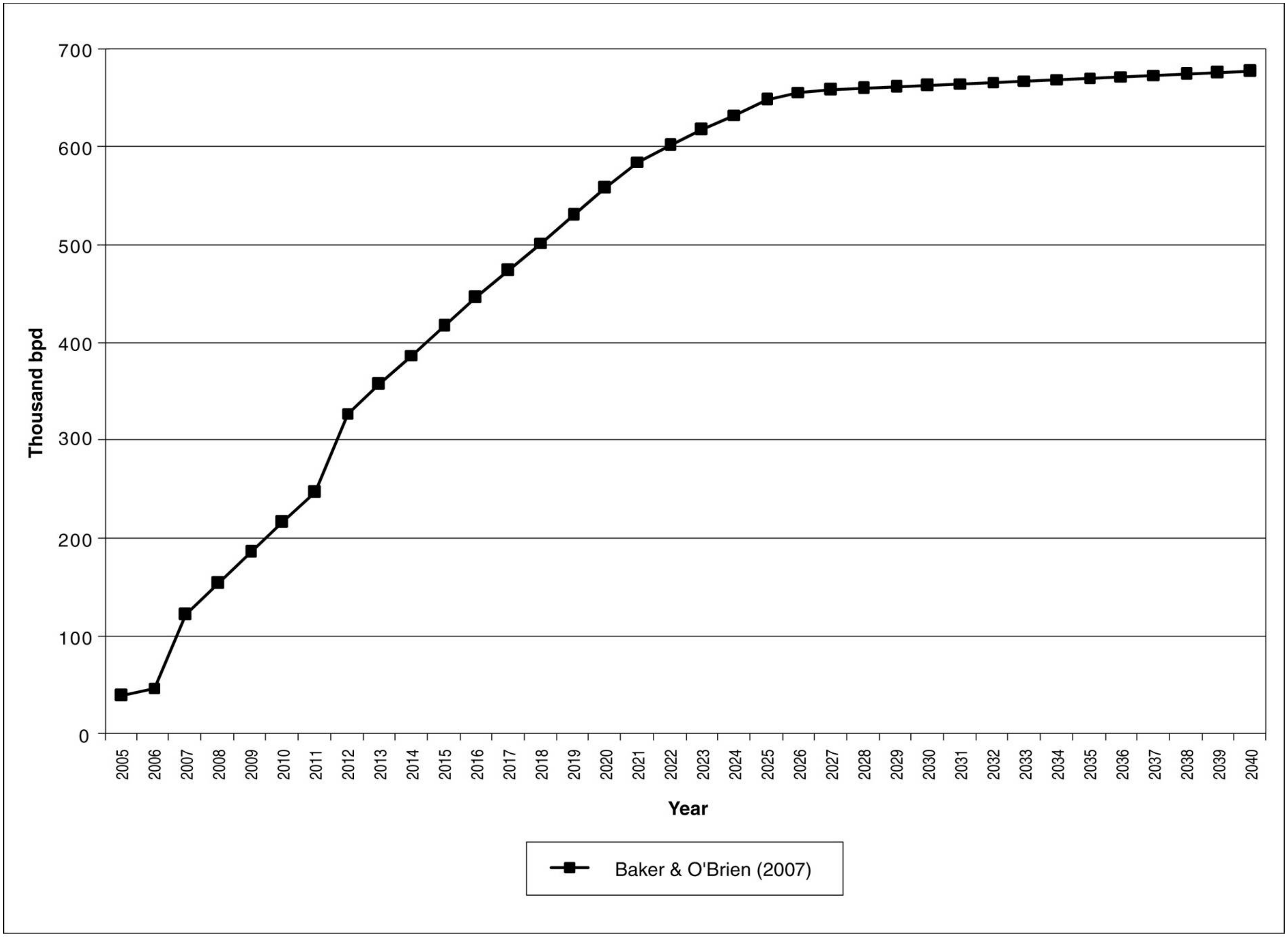


Figure 1-6. Projected Demand for Crude Oil Marine Imports to Southern California (Incremental Over 2004)

Given the depths at existing berths in the Los Angeles Basin, vessels carrying more than approximately 400,000 bbl bound for Port of Long Beach Berths 76-78 or 84-87, or LAHD Berths 238-240, must lighter cargo onto one or more vessels offshore, and vessels carrying more than about 1.7 million bbl bound for Port of Long Beach Berth 121 must also lighter cargo onto smaller vessels offshore.

With the shift toward more foreign imports, and especially from the Middle East, the economics of the crude oil industry will dictate a switch toward larger vessels. For instance, Baker & O'Brien (2007) project that whereas in 2004 approximately 21 percent of the 189 vessels delivering crude oil to southern California were by VLCCs, and that VLCCs carried 37 percent of the crude oil imported to southern California, in 2025 about 30 percent of vessel calls will be by VLCCs and that they will carry almost half of the crude oil imported to southern California.

1.2.1.3.3 Inadequate Berthing Capacity

The growing demand for water-borne imports of crude oil will result in increased offloading activities in the San Pedro Bay Ports. Baker & O'Brien (2007) do not specifically address the shortage of petroleum import infrastructure that will be necessary to support the increased offloading; however, the CEC has addressed this issue in recent IEPRs (CEC 2007a, CEC 2007b, CEC 2007c, CEC 2003b) as well as in a 2005 report evaluating California's petroleum infrastructure (CEC 2005). These reports indicate that infrastructure expansion is required to accommodate the projected increases. These reports also point out the potential for supply disruptions and higher and more prolonged price spikes due to the shortage of petroleum import infrastructure that California faces as it attempts to accommodate the growing need to import foreign crude oil by marine tankers. (Appendix D2 of this SEIS/SEIR provides additional information related to the potential for price volatility for consumer transportation fuels.) Some applicable sections of these reports are quoted below:

"Unplanned outages at in-state refineries or pipeline facilities quickly tighten gasoline and diesel supplies, creating price spikes. California is not connected by pipeline to other domestic refining centers, and in-state refiners cannot readily procure gasoline, diesel, and other blending components when outages occur. Relying on imports of petroleum and finished product coming into the constrained import infrastructure creates a market conducive to extreme price volatility. This contributes to higher and more prolonged price spikes, as has been experienced in recent years." (CEC 2007a)

"The increasing load on the existing crude oil import facilities means that the diminishing spare import capacity could increase the risk of a significant fuel supply problem should one of the larger crude oil import terminals (such as Berth 121 in Long Beach) be temporarily out of commission for an extended period of time." (CEC 2007c)

"The crude oil import facilities of Southern California could not accommodate the large forecasted increase of imports and would require the construction of at least one large new crude oil import facility" (CEC 2007c).

"Existing marine infrastructure could be diminished as a result of continued pressure to remove petroleum facilities, especially in the Los Angeles Basin, and the requirements of new State Lands Commission standards for petroleum marine terminals." (CEC 2005)

"Over the next 20 years, California's infrastructure will require expansion in petroleum marine terminal capacity, marine storage, and the gathering pipelines that connect marine facilities and refineries to the main product pipelines. Most of the expansion in the marine terminal and marine storage capacity will be required in the Los Angeles Basin." (CEC 2005)

"Without increasing the fuel supply by importing additional crude oil and transportation fuels, California will not only continue to experience supply disruptions and price spikes, but also supply shortages and prolonged and elevated prices, for gasoline fuels." (CEC 2003b)

"The outlook for the next several years is that Very Large Crude Carrier (VLCC) (transporting one to two million barrels) use will need to double from an average of one to two ships per week due to greater reliance on foreign sources of crude oil. For this reason, additional infrastructure improvements for berthing facilities as well as crude oil storage tanks will need to be constructed." (CEC 2003a)

The CEC's latest reports underscore conclusions of earlier CEC reports as well (CEC 2003a, 2003b) in which the CEC linked fuel supply disruptions and price spikes to the lack of import infrastructure. Satisfying future demands will require major modifications to existing facilities and/or the construction of a new deep-water berth and tanks to receive the projected increase in imports. In doing so, supply disruptions and the associated retail transportation fuel price spikes that are projected by the CEC (e.g., CEC 2007a) can be minimized.

Currently, there are no developed berths in California with sufficient water depth to accommodate a fully loaded VLCC vessel carrying 2 million or more bbl of cargo. The limited number of existing berths and the relatively shallow water depths at those berths are two major factors impacting future crude oil imports into southern California.

Furthermore, over the last three decades, the number of operating berths used to offload crude oil for refineries in southern California has declined dramatically. In 1978 there were 16 such berths, including eight at the Port, six at the Port of Long Beach, and two open-water crude oil unloading mooring locations outside the two harbors. At present there are only five: one at the Port, three at the Port of Long Beach, and one open-water mooring location. The existing berths and mooring location are shown in Figures 1-4 and 1-5, and key characteristics are summarized in Table 1-3.

1.2.1.3.4 Need for Increased Crude Oil Tank Capacity

Over the past 15 years approximately 6 million bbl of petroleum storage tank capacity has been removed from southern California (CEC 2007a). CEC (2007a) suggests that even as California develops and implements its alternative fuels plans under AB 1007, the additional crude oil storage tank capacity necessary by 2020 to meet California's storage requirements ranges from 5 to 17 million bbl. This estimate does not include additional storage tank capacity needed for refined products, including alternative fuels, which CEC estimates as ranging from 5.4 million to 13.1 million bbl (CEC 2007a).

The need for increased crude oil storage tank capacity is driven by several factors, including the need to reduce supply disruptions in consideration of longer ocean voyages for import tankers; the need to offload larger cargo volumes; and the need to accommodate multiple customers and types of crude oil. These factors are described below.

Additional Tanks to Reduce Supply Disruptions. The replacement crude oil for declining Alaska and California crude oil supplies will arrive on marine tankers from foreign crude sources that are increasingly distant from southern California refineries. The transit time to Los Angeles for Alaskan and South American crude oil is typically 7 to 10 days and is generally much more predictable than a longer transit. The average transit time from the Middle East is 38 days and much less predictable. With crude oil arriving on vessels whose arrival date is less predictable, refiners will need to be able to store larger volumes in order to minimize supply interruptions.

Additional Tanks to Offload Increasingly Larger Cargo Volumes. As more crude oil is imported from the Middle East and other foreign sources, larger tankers will arrive at southern California ports. As cargo volumes increase, it will become necessary to increase the capacity of the tanks used to store the cargo during and immediately after offloading.

Recent CEC reports support the need to construct additional crude oil tank capacity:

"Additional storage tank capacity necessary to meet California's product storage requirements by 2020 ranges from 5.4 million to 13.1 million barrels and the additional crude oil storage capacity needed ranges from five to 17 million barrels. California must prepare for this range of additional storage capacity even as it develops and implements its alternative fuels plans under AB 1007. Additional infrastructure will be necessary to meet California's transportation requirements, even with alternative fuels meeting a greater percentage of those requirements." (CEC 2007a)

"The outlook for the next several years is that VLCC use will need to double from an average of one to two ships per week due to greater reliance on foreign sources of crude oil. For this reason, additional infrastructure improvements for berthing facilities, as well as crude oil storage tanks will need to be constructed." (CEC 2003a)

Supplies for Multiple Customers and Multiple Crude Types. Local refineries optimize their supply by looking for crude oil that matches the specifications that best fit their processing units. Furthermore, because customers use different types of crude oil and need to keep the specifications of the crude oil within certain ranges, extra tanks are needed to segregate incoming crude oil types even when tank capacities are not fully utilized. In addition, third-party tank facilities often use multiple tanks for the same type of crude, even when tank capacities are not fully utilized, in order to track ownership by volume and to maintain accurate crude oil custody records. The practices of maintaining crude supplies within specified ranges and tracking crude oil custody will continue to contribute to the need for additional crude oil tanks in the near term.

1.2.2 Existing Conditions

1.2.2.1 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.

1.2.2.2 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 1-7). The proposed Tank Farm Site 2 on Pier 300 is the area adjacent to the Seaside Avenue/Navy Way and Reeves Avenue/Navy Way intersections (Figure 1-1). 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.

1.2.2.3 Project Sites and Surrounding Uses

1.2.2.3.1 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.

1.2.2.3.2 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 38.1 acres (15.4 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).

1.2.2.3.3 Pipeline Routes and Pigging Station Site

The general locations of each of the pipeline routes are shown in Figure 1-1. Detailed route descriptions for each pipeline, including additional figures, are provided in Section 1.2.4.2.3. 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

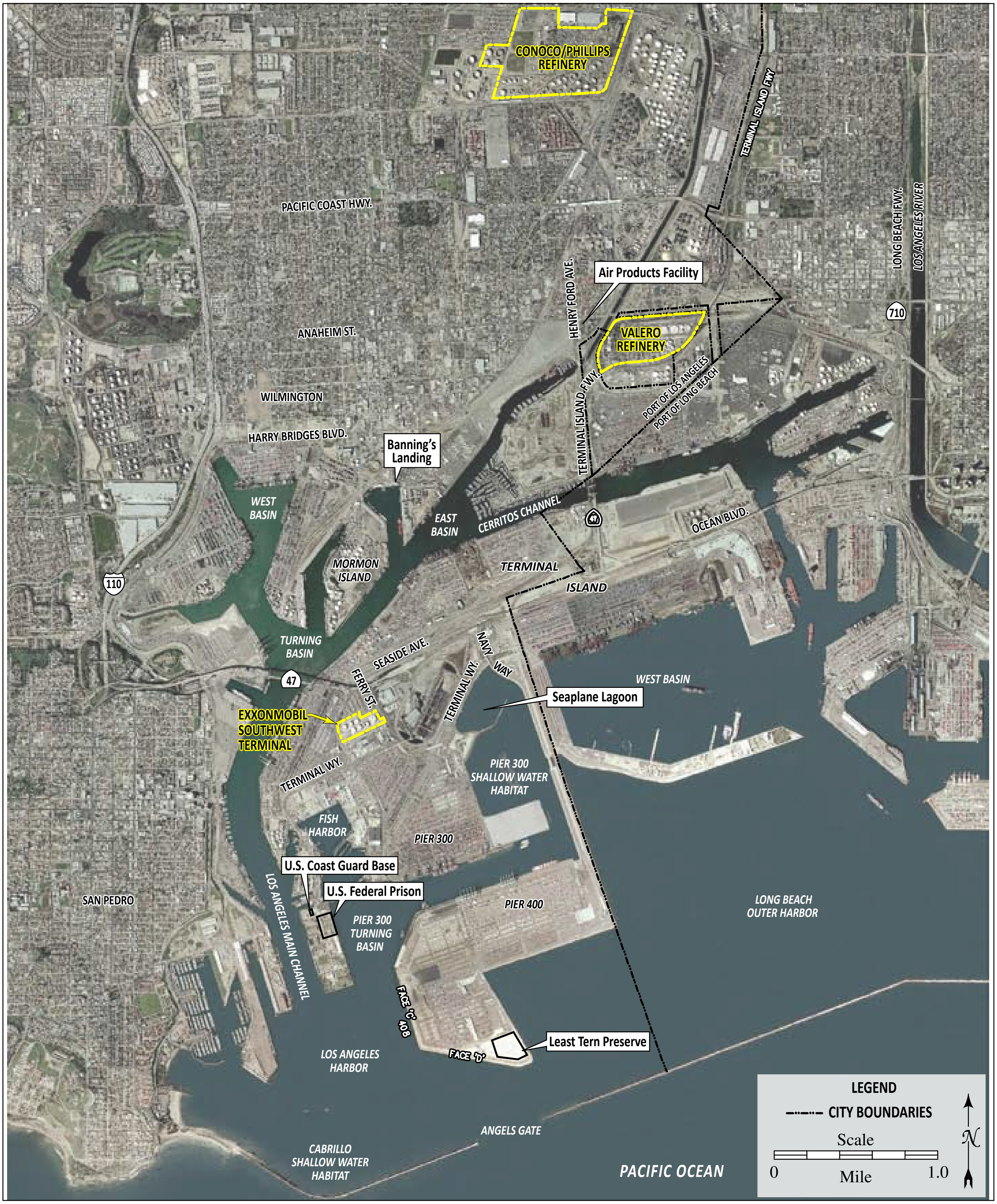


Figure 1-7. Existing Conditions at the Proposed Project Site

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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 (0.5 ha) 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 Site B. Site B would encompass approximately 0.61 acres (0.25 ha) and would be located directly east of Henry Ford Avenue, south of Anaheim Street, and west of the Air Products facility. 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 1.2.4.2.3 provides more information about pipeline routes including how the routes would differ if Site B were used in lieu of Site A.

1.2.2.4 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.

1.2.3 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 Section 1.2.1.3 of this SEIS/SEIR.

1.2.3.1 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.

1.2.3.2 NEPA Purpose and Need

The discussion of future crude oil demand and the need for additional facilities to accommodate that demand presented in Section 1.2.1.3 of this SEIS/SEIR 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.

1.2.4 Proposed Project

1.2.4.1 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 of the Draft SEIS/SEIR) 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.

Dock-side Emissions Reductions. 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 1.3.2.3 in the Final SEIS/SEIR (Section 1.6.2.3 in the Draft SEIS/SEIR). 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 1.2.4.2.1 and Section 3.2. 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 (MM) AQ-15 and MM AQ-20), another technology for emissions reduction may eventually be used as an alternative to AMP. One such technology is the Advanced Cleanup Technologies, Inc. (ACTI) new Advanced Maritime Emissions Control System (AMECS). The AMECS system involves a bonnet, which for the maritime version would be fitted over a ship's exhaust stack, and uses a series of scrubber processes to remove harmful compounds. 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 1.2.4.2.1 of the Final SEIS/SEIR and MM AQ-15 and MM AQ-20 in Section 3.2. Installation of AMECS would require separate environmental analysis if added in the future.

Emission Reduction Credits. As a 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 1.2.4.4.5 describes the nature of the requirement and credits in more detail; however, the air quality analysis presented in Section 3.2 does not include any emission reductions from purchase of such credits.

1.2.4.2 Facility Design and Configuration

1.2.4.2.1 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 1-8). Table 1-4 summarizes the facilities that would or might be constructed for the Pier 400 Marine Terminal.

Berth 408's current water depth of 81 feet (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 feet (335 m) and a beam of 200 feet (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.

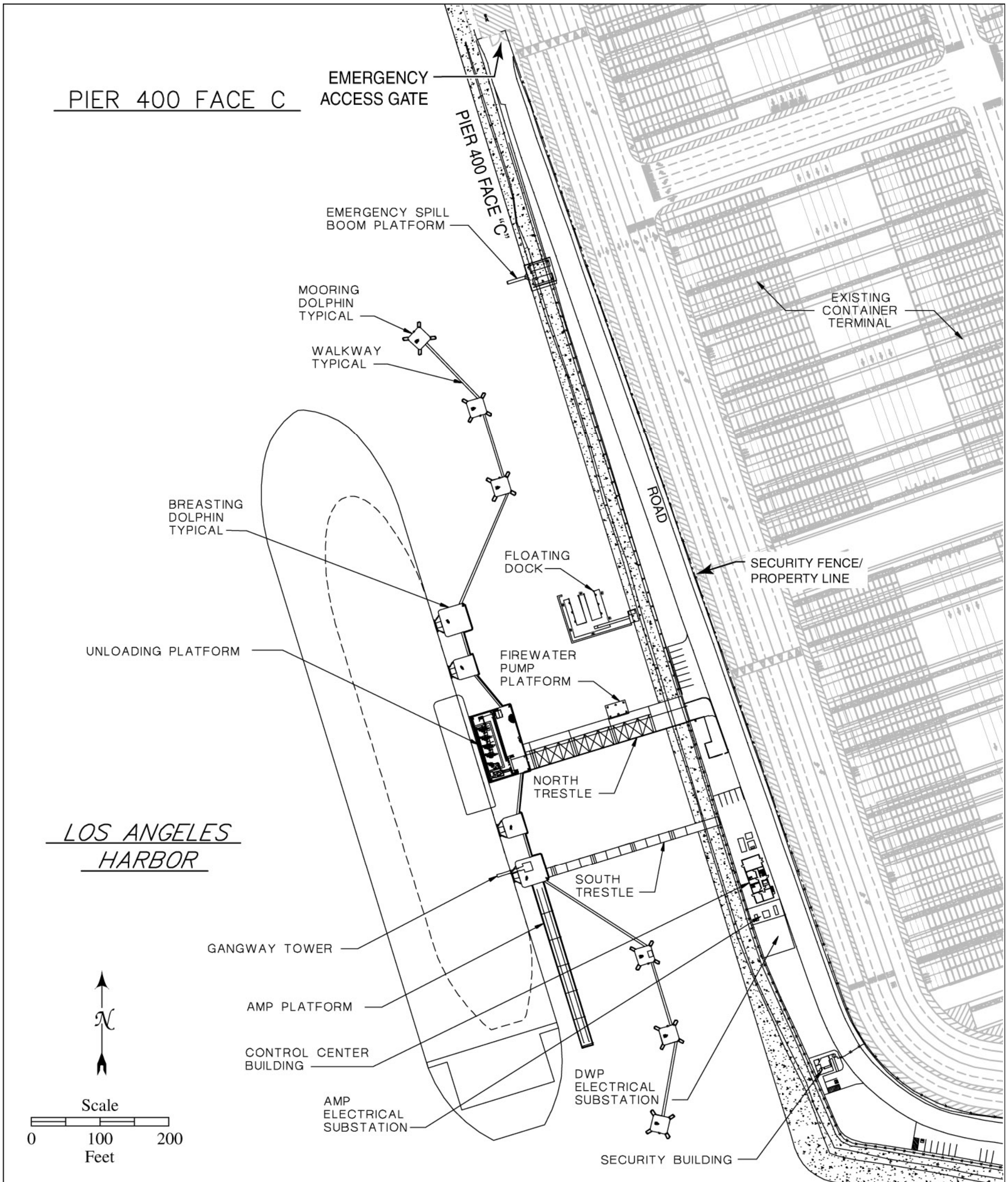
In addition to MOTEMS and the Port's code, the new facility would be designed in accordance with all other appropriate recognized engineering, safety, and seismic hazard design standards, including those listed below. The most severe or restrictive design code in effect at the time would apply. Details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

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 feet (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. Proposed Project components (including the AMP and AMECS platforms) would require approximately 136 piles in water (92 steel and 44 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.



Source: PLAMT 2007; SPEC Services 2007

Figure 1-8. Face C of the Proposed Crude Oil Marine Terminal on Pier 400

Table 1-4. Operational Details and Physical Elements of the Berth 408 Marine Terminal

Component	*Description*
Parcel Size	5.0 acres (2.0 ha)
Berth Depth	81 feet (24.7 m) at MLLW
Berth Height	15 feet (4.6 m) above MLLW
Design Vessel Size	325,000 DWT, 1,100 feet (335 m) long, 200 feet (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 and Dock-Side Marine Terminal Control 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
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 this alternative emissions control system eventually be used.

Note:

1. AMP is a mitigation measure and AMECS represents a potential future environmental measure; the piles to support the required infrastructure are part of the proposed Project. See Section 1.2.4.1 for additional information about the nature of these measures as components of the proposed Project.

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-foot (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. Two buildings are proposed for construction at the Marine Terminal. These will both 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.
- *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.

The administration building located at the marine terminal in the Draft SEIS/SEIR has been moved to Tank Farm 2 as described in Section 1.2.4.2.2.

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.

Dockside Emissions Control. The Marine Terminal would be equipped with the Alternative Maritime Power (AMP) system, which is a system developed by the Port to reduce dockside 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 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 separately, in order that the tenant would comply in a timely manner with Mitigation Measure AQ-15, which would require phased-in control of dockside emissions. Compliance with Mitigation Measure AQ-15, like other mitigation measures identified in this document, would be mandated under the terms of the lease for the proposed Project. These elements, therefore, are considered part of the AMP implementation and thus part of the dockside emission control mitigation measure, rather than part of the proposed Project. (Section 1.6.2 of the Draft SEIS/SEIR has additional information about AMP implementation at the Port.)

However, 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 complying with the dockside emissions control mitigation measure. 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.

PLAMT has indicated that it anticipates that AMECS technology may eventually prove feasible and cost-effective as an alternative to AMP for some or all vessels calling at the proposed Project to comply with dockside emissions control mitigation. Parts of an 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).

Accordingly, the lead agencies cannot at this time conclude that AMECS provides a feasible means of achieving required dockside emissions control mitigation. Nevertheless, Mitigation Measure AQ-15 has been revised to provide that the Port of Los Angeles may permit the tenant to install and implement an AMECS system as an alternative means of complying with dockside emissions control mitigation requirements, either in combination with or in place of AMP, providing that the Port first finds, based on environmental review, that AMECS would feasibly control dockside emissions at least as effectively as AMP.

To allow for this potential future approval of AMECS as an alternative means of complying with the dockside emissions control mitigation measure, the proposed Project also includes the construction of a platform that could support an AMECS vessel emission control system. However, aside from the AMECS support platform, no other infrastructure for the AMECS is included as part of the proposed Project.

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.

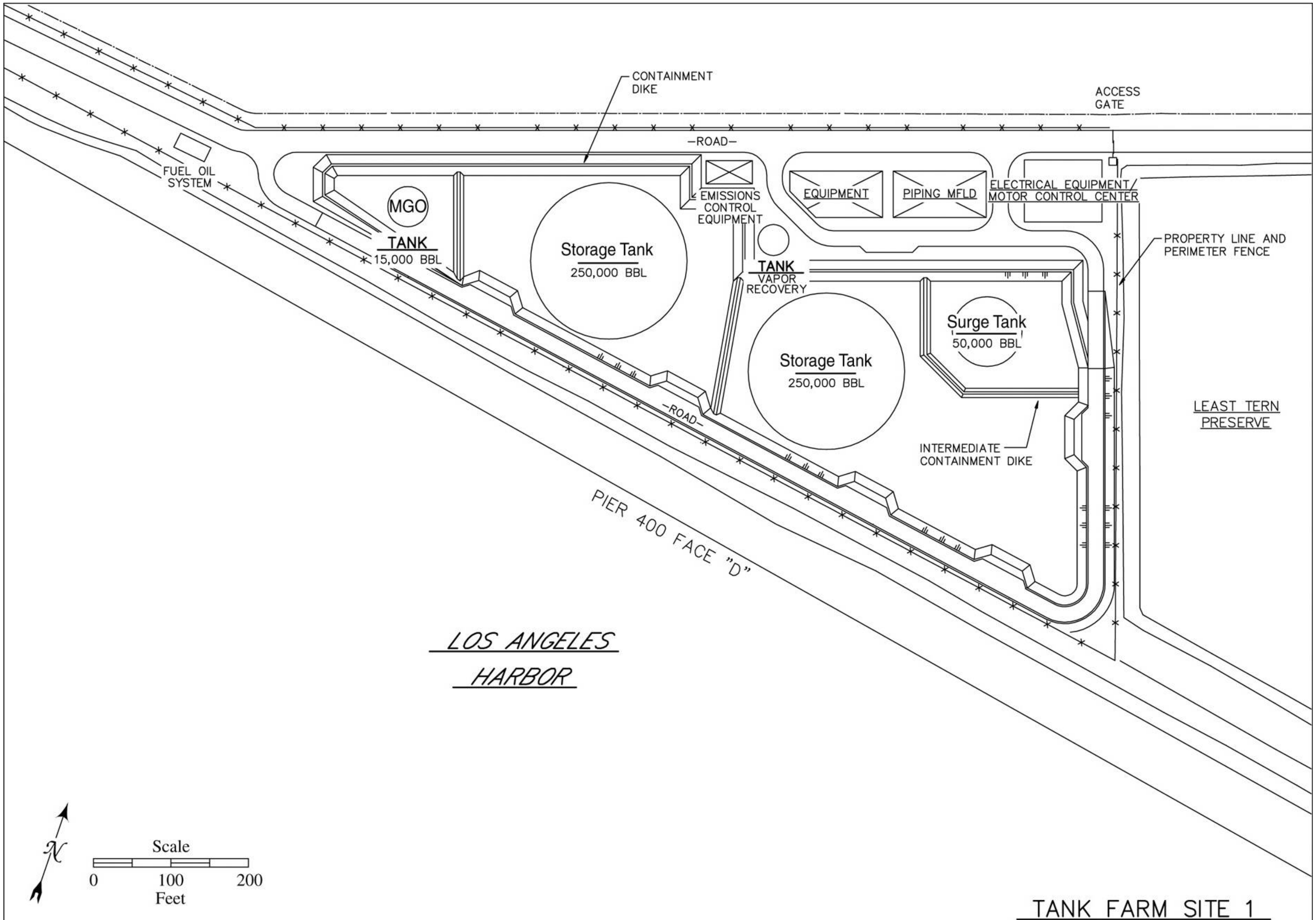
1.2.4.2.2 Tank Farms

The detailed layout for Tank Farm Site 1 is shown in Figure 1-9, and for Tank Farm Site 2 is shown in Figure 1-10 (note that the revised figure for Tank Farm Site 2 includes the Administration Building, which was to be at the Marine Terminal in the Draft SEIS/SEIR). Table 1-5 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 1.2.4.4.5.

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 1-9. Proposed Tank Farm Site 1 (Pier 400 Tank Farm)

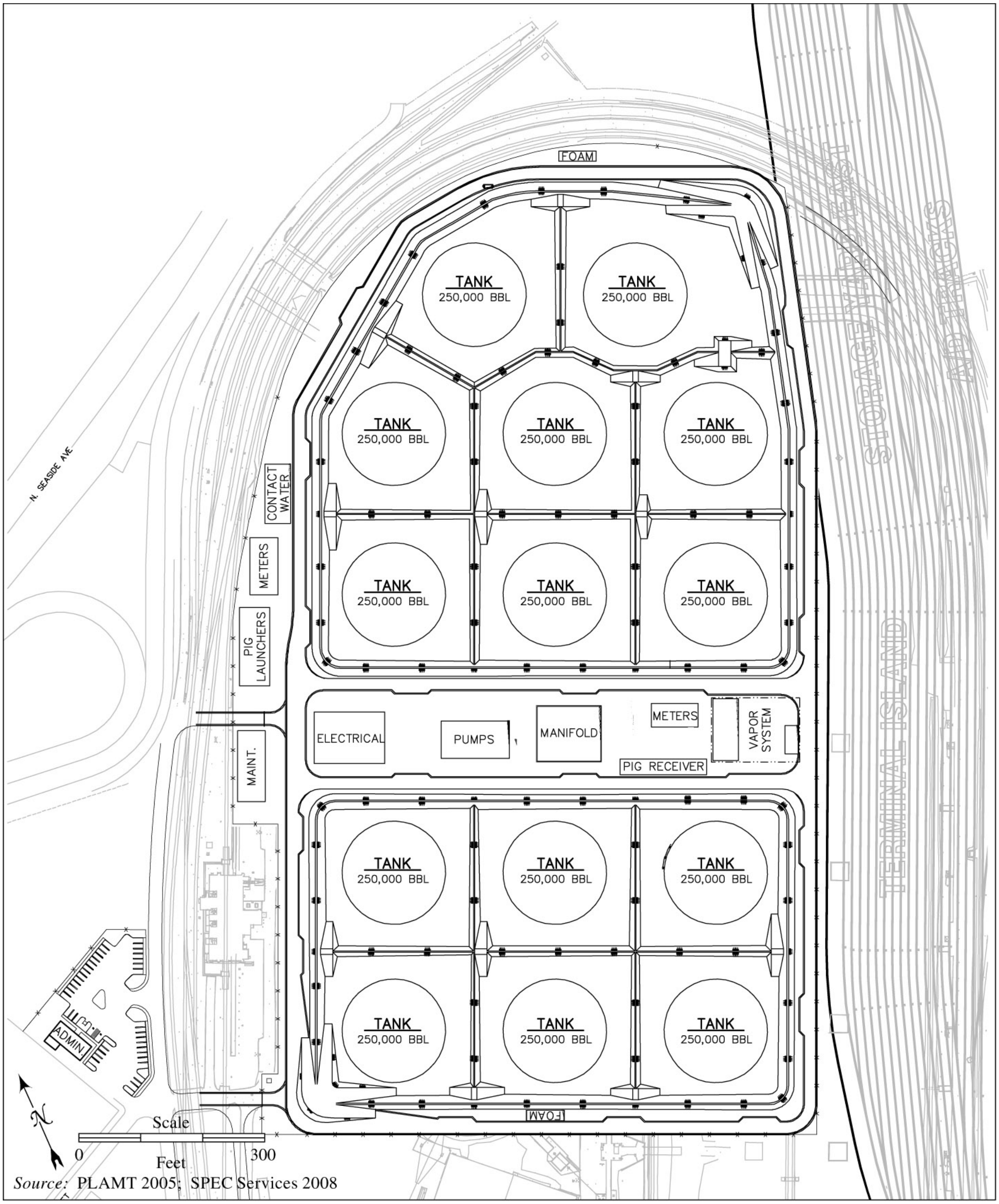


Figure 1-10. Proposed Tank Farm Site 2 (Terminal Island Tank Farm)

Table 1-5. 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)	38.1 acres (15.4 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	Either sites (Site A or Site B): Pipeline scraper traps	
Buildings	Motor Control Building	Two buildings: one Administration Building, and one building to house Motor Control Center, Tank Farm Operator Office, and Control Center
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. In addition, Tank Farm Site 2 would now include the Administration Building (described as located at the Marine Terminal in the Draft SEIS/SEIR), which 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. The Administration Building was originally proposed to be located at the Marine Terminal, and was analyzed for potential environmental impacts in that location in the Draft document. However, since release of the Draft document, PLAMT has revised its application to locate this building at Tank Farm 2 to facilitate operations. This Final document concludes that the relocation of the Administration Building would not result in any adverse environmental impacts as discussed in Section 3. The building will be constructed within the same size parameter and use the same construction equipment as assessed in the Draft SEIS/SEIR. The new location is zoned industrial and is therefore consistent with land use. Preliminary testing indicates that there is no know hazardous contamination at the new location. There would be no new impacts to traffic, as the route taken by the workers would be primarily the same and, as described in Section 3.6, many of the 54 full-time equivalent employees would go to locations other than the administration building. (The entire full-time equivalent employment of 54 people includes personnel at the Marine Terminal, tugboat and Port pilot crews, and inspection and maintenance teams, including some maintenance tasks that begin five to ten years after the startup of operations. As described in Section 3.6, only a fraction of the staff would work at the Administration Building and many of these would commute outside normal peak hours; for instance, of the 24 employees who would have worked at the Marine Terminal and Tank Farm Site 1 area (of which most will work at the Administration Building), only 13 are expected to end their shifts during the afternoon peak hour. The Administration Building would be certified in the LEED standards established by the U.S. Green Building Council.

1.2.4.2.3 Pipelines

The general locations of each of the pipeline routes are shown in Figure 1-1, and the characteristics of the pipelines are summarized in Tables 1-6, 1-7, and 1-8. Figures 1-11, 1-12, 1-13, and 1-14 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 1-11) 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 1-11) 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 1-11) would run from the existing network at Ferry Street into the ExxonMobil Southwest Terminal.

Table 1-6. 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	23,010 linear feet (7,013 m)
Length on LAHD property	23,010 linear feet (7,013 m)
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 1-7. 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	2,025 linear feet (617 m)	1,900 linear feet (607 m)	100 linear feet (30 m)
Length on LAHD property	2,025 linear feet (617 m)	1,900 linear feet (607 m)	0 linear 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 1-8. 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 linear feet (1,189 m)	2,200 linear feet (671 m)
Length on LAHD property	3,900 linear feet (1,189 m)	2,200 linear feet (671 m)
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 1-11 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 1-12) 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 1-13 and Figure 1-14) 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 1-13) 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. Slight route modifications may be made to accommodate other uses within the Port. Any changes however, would be analyzed to ensure consistency with the environmental analysis presented in the SEIS/SEIR. The design specifications of the pipelines, piping, and related facilities are presented in Appendix E of this SEIS/SEIR.

Proposed Pipeline Segment 1. Pipeline Segment 1, a 42-inch pipeline (Figure 1-11, Table 1-6), would transport crude oil from the Berth 408 unloading operations to the tank farms with an approximate total length of 23,010 linear feet (7,013 m). 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 feet (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.

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 1-11 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 1-7 and Figure 1-11). 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. Pipeline segment 2a would be approximately 2,025 feet (617 m) while segment 2b would be approximately 1,900 feet (607 m) in length. Pipeline segments 2a and 2b would both be buried about 3-4 feet below ground, by trenching and boring (see Figure 1-11).

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 1-11).

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 1-11).

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 (approximately 2,200 linear feet [671 m]), and through Pipeline Segment 2b to Pipeline Segment 3 (approximately 3,900 linear feet [1,189 m]). Table 1-8 summarizes key characteristics of this pipeline.

From Site A, a new proposed 24-inch pipeline (Segment 4; Figure 1-13 and Figure 1-14) would connect to the Ultramar/Valero Refinery with an approximate length of 6,420 linear feet (1,957 m). 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.

Figure 1-11. Proposed Pipeline Segments 1, 2a, 2b, and 2c

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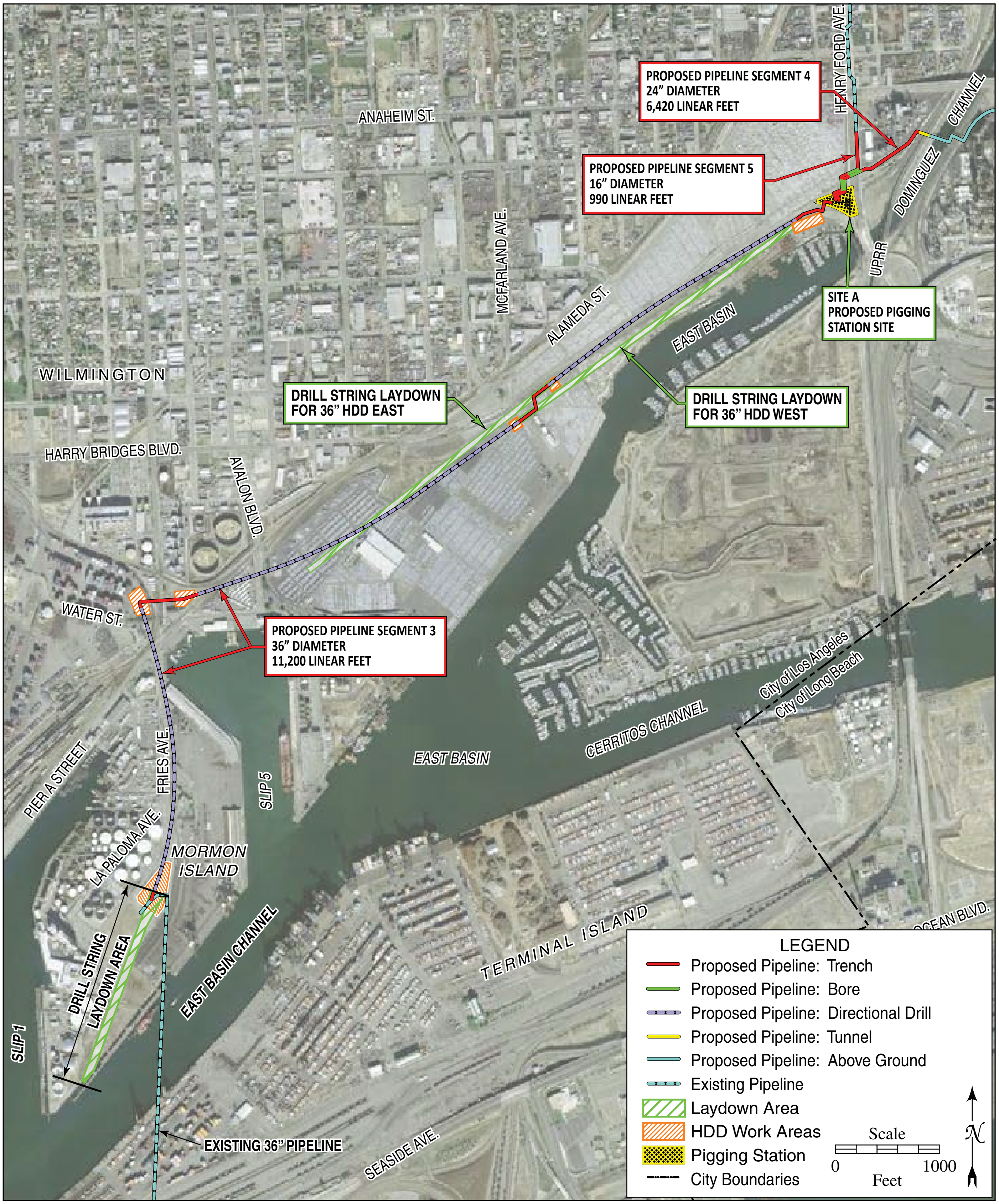

Figure 1-12. Proposed Pipeline Segment 3

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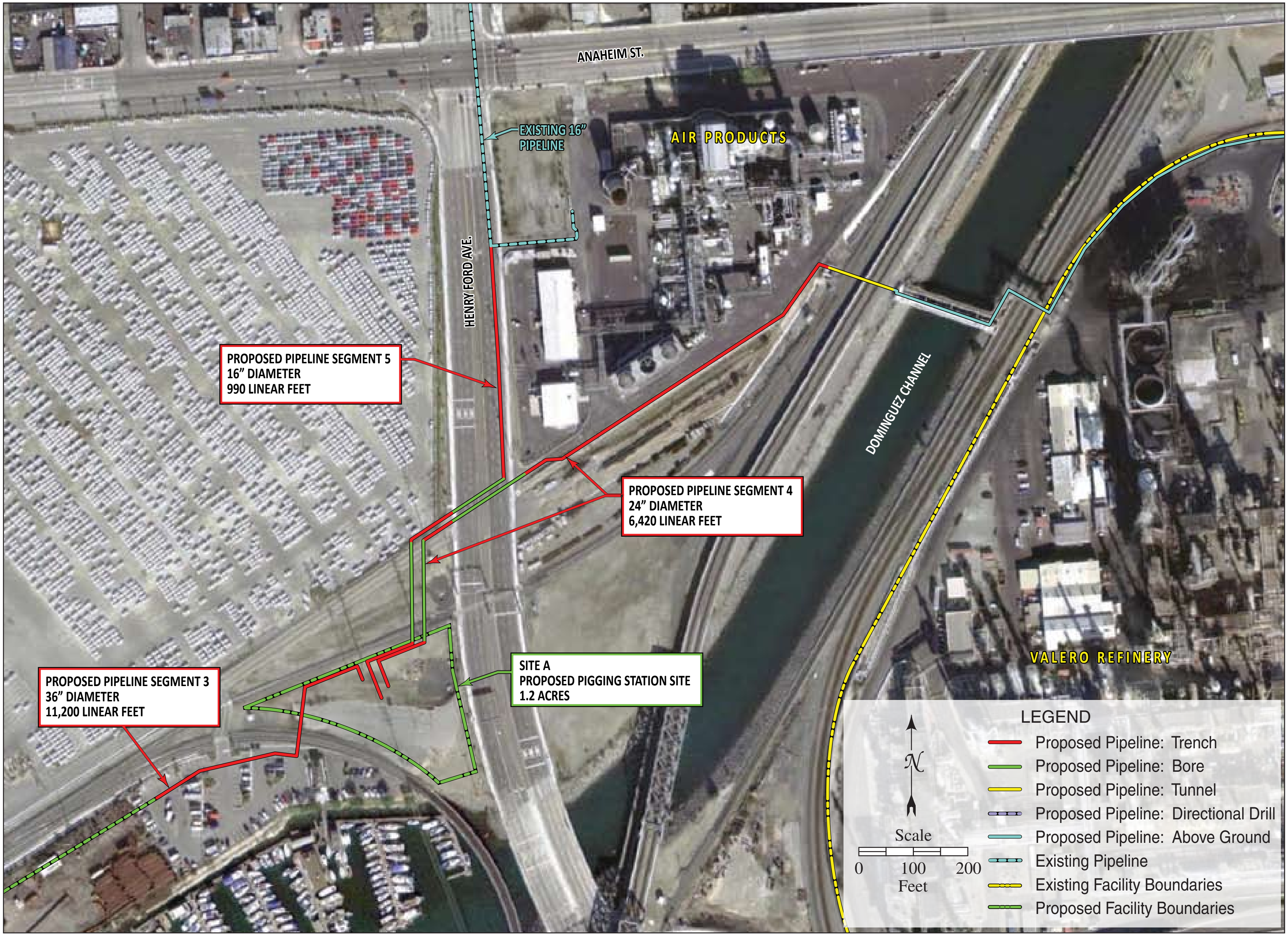

Figure 1-13. Proposed Pipeline Segments 4 and 5

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Figure 1-14. Proposed Pipeline Segment 4 - East End

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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 1-12) would proceed north about 3,500 feet (1,067 m) to Alameda Street and then northeast another 7,700 feet (2,347 m) roughly along Alameda Street to Site A. Table 1-9 shows key characteristics of all three segments.

Table 1-9. 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	11,200 linear feet (3,414 m)	6,420 linear feet (1,957 m)	990 linear feet (302 m)
Length on LAHD property	11,200 linear feet (3,414 m)	1,000 linear feet (305 m)	990 linear feet (302 m)
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	One Pipeline Pig launcher and one Pipeline Pig Receiver	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

Also from Site A, a new proposed 16-inch pipeline (Segment 5; Figure 1-13) would extend about 990 linear feet (302 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 1.2.2.3.3, 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 1-15). In this option, Pipeline Segment 3 would run approximately 12,350 feet (3,764 m) 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 (70 m) from Site B to the existing 16-inch diameter Plains pipeline that extends to the ConocoPhillips Carson Refinery. Pipeline Segment 4 would run 6,555 feet (1,998 m) in total. It 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 of this SEIS/SEIR.

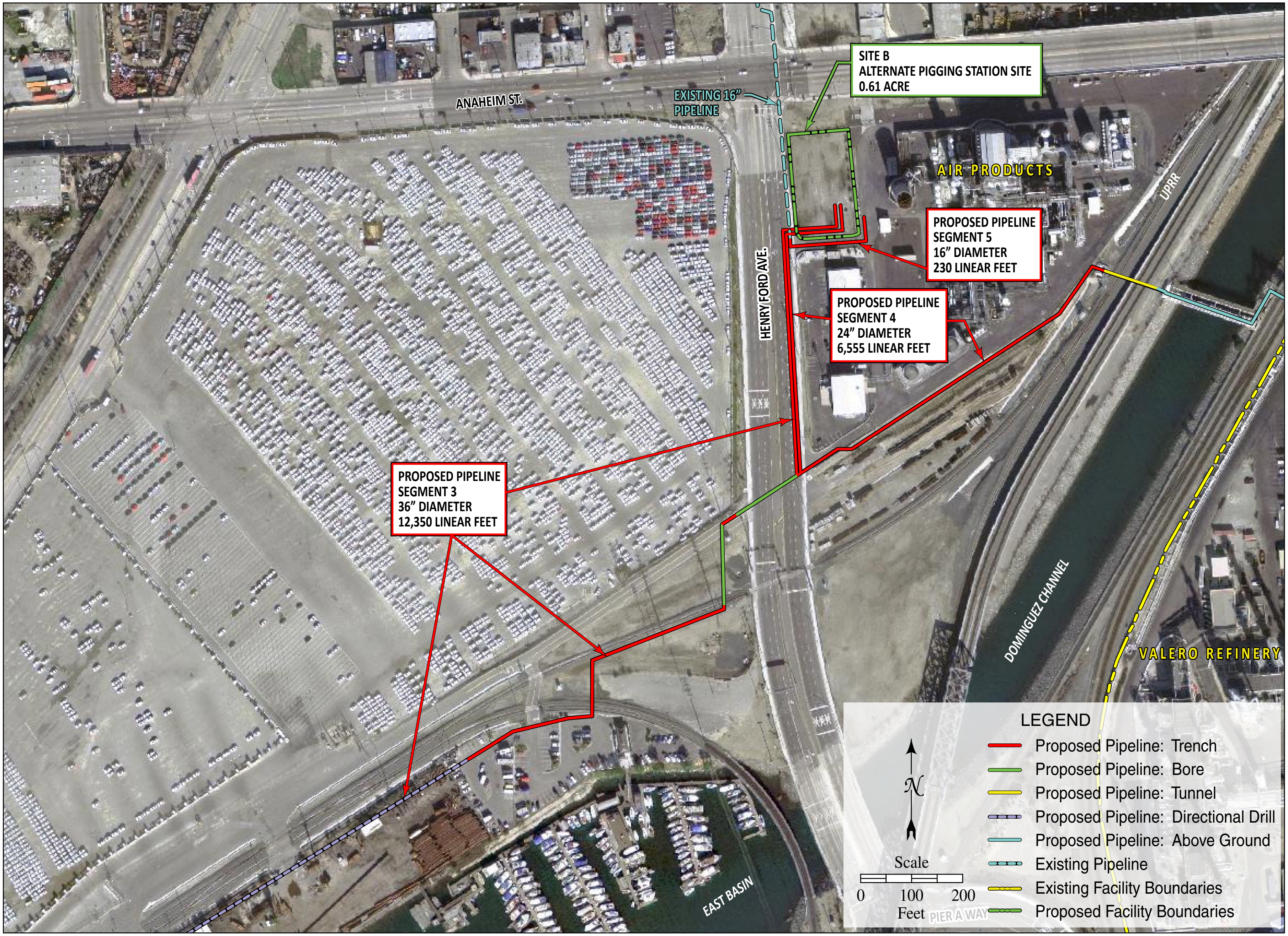

Figure 1-15. Proposed Site B Pigging Station and Pipeline Segments 3, 4, and 5 - East End

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1.2.4.3 Construction

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

1.2.4.3.1 Schedule and Labor Force

1.2.4.3.1.1 Schedule

The Marine Terminal, both tank farms, all pipelines, and all ancillary components would be completed within about 30 months of project approval (Figure 1-16). 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 1.2.4.3.5 for probable locations and uses).

1.2.4.3.1.2 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 1-17 and Section 1.2.4.3.5), 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 1.2.4.3.5) 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).

1.2.4.3.2 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.

Figure 1-16. Proposed Project Construction Schedule

1.2.4.3.3 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.

1.2.4.3.4 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 1-11, 1-12, 1-13, and 1-14). 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.

1.2.4.3.5 General Construction Practices

1.2.4.3.5.1 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 of the this SEIS/SEIR). As a safety precaution, a minimum of one 20-pound dry chemical unit fire extinguisher would accompany each welding truck on the job.

1.2.4.3.5.2 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 1-17 and Table 1-10). 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 1-11 through 1-13). Alternative sites have been provided for cases where the proposed construction facilities and staging areas are not available (Table 1-10).

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 1-10). 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

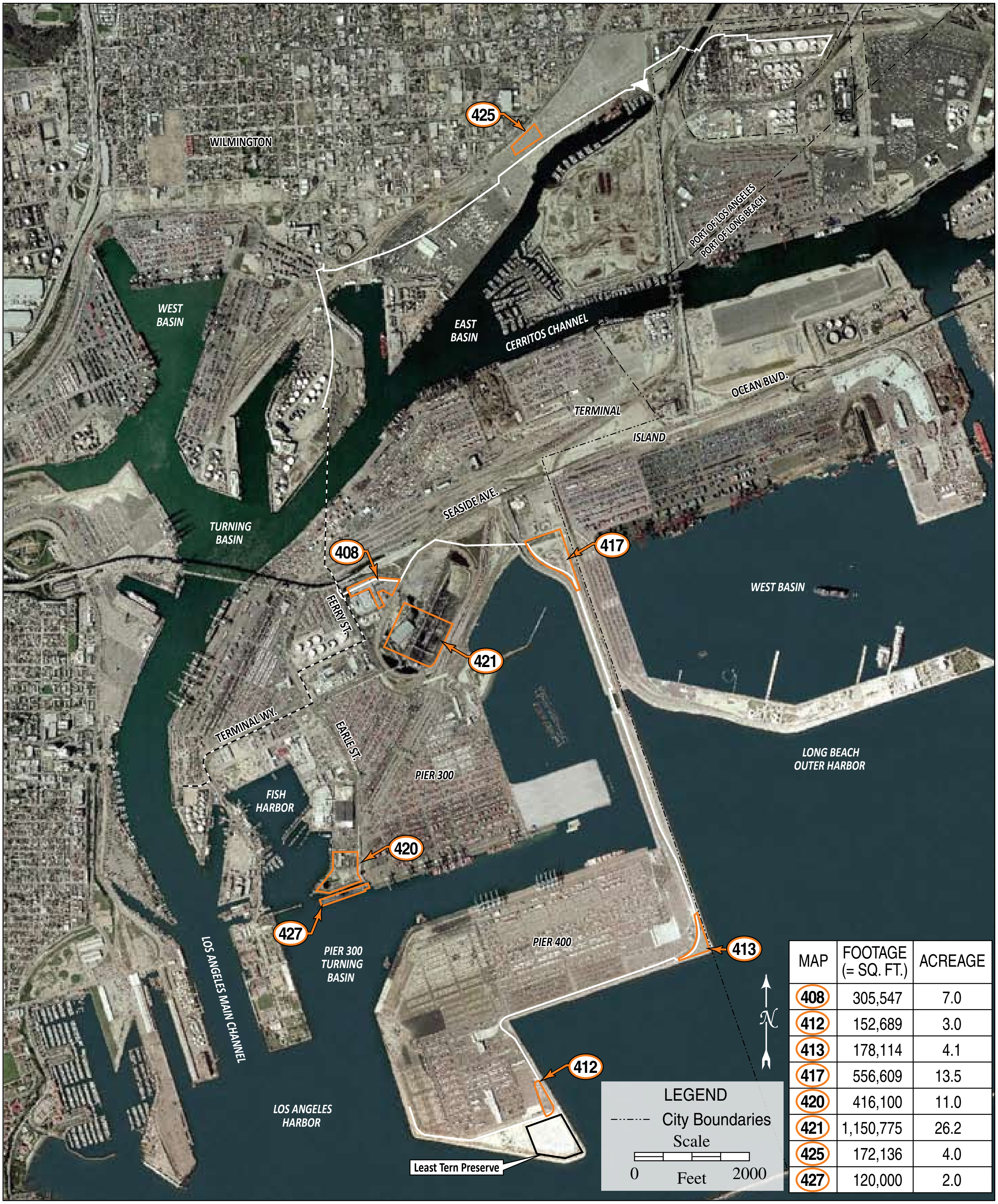
Most construction equipment would require either gasoline or diesel fuel. Welding machines would mostly use electric power, but ultra low sulfur diesel or California Air Resources Board (CARB) unleaded Phase III fuel may be necessary in areas where electric welding machines are not applicable.

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 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.



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 1-17. Proposed Project Temporary Construction Yards

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Table 1-10. 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-foot 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-foot 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 1-17)

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

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.

1.2.4.4 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.

1.2.4.4.1 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 1-11; 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 1-11 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 1-11. 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 of the Draft SEIS/SEIR; 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.

1.2.4.4.2 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 1.2.4.2.

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 of this Final SEIS/SEIR 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 1.2.4.1 and 3.2).

1.2.4.4.3 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.

1.2.4.4.4 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.

1.2.4.4.5 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.

1.2.4.5 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.

1.3 Port of Los Angeles Environmental Initiatives

The Environmental Management Policy of the Port, as described in this section, was approved by the Los Angeles Board of Harbor Commissioners on April 27, 2003. The purpose of the Environmental Management Policy is to provide an introspective, organized approach to environmental management; further incorporate environmental considerations into day-to-day Port operations; and achieve continual environmental improvement.

The Environmental Management Policy includes existing environmental initiatives for the Port and its customers, such as the voluntary Vessel Speed Reduction Program (VSRP), Source Control Program, Least Tern Nesting Site Agreement, Hazardous Materials Management Policy, and the Clean Engines and Fuels Policy. In addition, the Policy will encompass new initiatives such as the development of an Environmental Management System (EMS) with the Construction and Maintenance Division of the Port, and a Clean Marina Program. These programs are Portwide initiatives to reduce environmental pollution. Many of the programs relate to the proposed Project. The following discussion includes details on a number of the programs and their goals.

1.3.1 Port Environmental Policy

The Port is committed to managing resources and conducting Port developments and operations in an environmentally and fiscally responsible manner. The Port strives to improve the quality of life and minimize the impacts of its development and operations on the environment and surrounding communities. This is done through the continuous improvement of its environmental performance and the implementation of pollution-prevention measures, in a feasible and cost-effective manner that is consistent with the overall mission and goals of the Port and with those of its customers and the community.

To ensure this policy is successfully implemented, the Port will develop and maintain an Environmental Management Program that will:

- Ensure this environmental policy is communicated to Port staff, its customers, and the community;

- Ensure compliance with all applicable environmental laws and regulations;
- Ensure environmental considerations include feasible and cost-effective options for exceeding applicable regulatory requirements;
- Define and establish environmental objectives, targets, and Best Management Practices (BMPs), and monitor performance;
- Ensure the Port maintains a Customer Outreach Program to address common environmental issues; and
- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations through environmental awareness and communication with employees, customers, regulatory agencies, and neighboring communities.

The Port is committed to the spirit and intent of this policy and the laws, rules and regulations, which give it foundation.

1.3.2 Environmental Plans and Programs

The Port has implemented a variety of plans and programs to reduce the environmental effects associated with operations at the Port. These programs range from the San Pedro Bay Ports Clean Air Action Plan to deepening the channels of the Port to accommodate larger and more efficient ships, to converting to electric and alternative-fuel vehicles. All of these efforts ultimately reduce environmental effects.

1.3.2.1 Clean Air Action Plan

On November 26, 2006, the LAHD Board of Harbor Commissioners, in conjunction with the Port of Long Beach Harbor Commissioners, approved the San Pedro Bay Ports Clean Air Action Plan (SPBP CAAP), a comprehensive strategy to cut air pollution and reduce health risks from Port-related air emissions. Through the CAAP, the Ports have established uniform air quality standards for the San Pedro Bay. To attain such standards, the Ports will leverage a number of implementation mechanisms including, but not limited to, lease requirements, tariff changes, CEQA mitigation, and incentives. Specific strategies to significantly reduce the health risks posed by air pollution from port-related sources include:

- Milestones with measurable goals for air quality improvements.
- Specific standards for individual source categories.
- Recommendations to eliminate emissions of ultra-fine particulates.
- A technology advancement program to reduce green house gases.
- A public participation process with environmental organizations and the business communities.

The CAAP focuses primarily on reducing DPM, along with NO_x and SO_x, with two main goals: (1) to reduce Port-related air emissions in the interest of public health, and (2) to disconnect cargo growth from emissions increases. The Plan includes near-term measures implemented largely through the CEQA/NEPA process and through new leases at both ports. Port-wide measures at both ports are also part of the Plan. The CAAP is expected to eliminate more than 47% of diesel particulate matter (DPM) emissions, 45% of smog-forming nitrogen oxide (NO_x) emissions, and 52% of sulfur oxides (SO_x) from port-related sources within the next five years.

The Port has had a Clean Air Program in place since 2001 and began monitoring and measuring air quality in surrounding communities in 2004. Through the 2001 Air Emissions Inventory, the Port has been able to identify emission sources and relative contributions in order to develop effective emissions reduction strategies. The Port's Clean Air Program has included progressive programs such as alternative maritime power (AMP), use of emulsified fuel and diesel oxidation catalysts (DOCs) in yard equipment, alternative fuel testing, and the Vessel Speed Reduction Program (VSRP).

In 2004, the Port developed a plan to reduce air emissions through a number of near-term measures. The measures were focused primarily on decreasing not only NO_x but also PM and SO_x. In August 2004, a policy shift occurred, and Mayor James K. Hahn established the No Net Increase Task Force to develop a plan that would achieve the goal of No Net Increase (NNI) in air emissions at the Port of Los Angeles relative to 2001 levels. The NNI plan identified 68 measures to be applied over the next 25 years that would reduce PM and NO_x emissions to the baseline year of 2001. The 68 measures included near-term measures; local, state, and federal regulatory efforts; technological innovations; and longer-term measures that are still in development. Appendix B of the Draft SEIS/SEIR contains a document that identifies and analyzes all of the NNI measures in terms of proposed Project applicability.

In 2006, in response to a new Mayor and Board of Harbor Commissioners, the Port of Los Angeles, along with the Port of Long Beach and in conjunction with the Air Quality Management District (AQMD), California Air Resources Board (CARB), and USEPA, began work on the CAAP. The goal of the CAAP was to expand upon existing emissions reductions strategies and to develop new ones. The Draft CAAP was released as a draft plan for public review on June 28, 2006, and it was approved at a joint meeting of the Los Angeles and Long Beach Boards of Harbor Commissioners on November 26, 2006. The CAAP focuses primarily on reducing diesel particulate matter (DPM), along with NO_x and SO_x, with two main goals: (1) to reduce Port-related air emissions in the interest of public health, and (2) to disconnect cargo growth from emissions increases. The CAAP includes project-specific measures (such as AMP and new yard equipment) implemented mainly through the CEQA/NEPA process and included in new leases at both ports, and Portwide measures (such as a truck program and measures for rail and tugs) implemented through tariffs, Memorandums of Understanding (MOUs) and direct Port programs. This Draft SEIS/SEIR analysis assumes compliance with the CAAP. Proposed Project-specific mitigation measures applied to reduce air emissions and public health impacts are consistent with, and in some cases exceed, the emission-reduction strategies of the CAAP.

1.3.2.2 Environmental Management System

In December 2003, the Port was selected by the USEPA, American Association of Port Authorities (AAPA) and the Global Environment and Technology Foundation to participate in the Port Environmental Management System (EMS) Assistance Project. One of only 11 U.S. ports to be selected, the Port is the first California seaport to incorporate the program into its operations.

An EMS is a set of processes and practices that enable an organization to reduce environmental impacts and increase operational efficiency. Participating ports are selected on the basis of existing environmental programs, diverse maritime facilities and management resources. An EMS weaves environmental decision-making into the fabric of an organization's overall business practices, with a goal of systematically improving environmental performance. An EMS follows the "Plan-Do-Check-Act" model of continual improvement. LAHD has implemented the EMS within its Construction and Maintenance Division and facilities, with the goal of expanding the EMS to additional functions over the course of the next several years. The Port's current EMS received official ISO 14001:2004 certification in September 2007.

1.3.2.3 Other Environmental Programs

Air Quality

- **Alternative Maritime Power.** AMP reduces emissions from container vessels docked at the Port. Normally, ships shut off their propulsion engines when at berth, but use auxiliary diesel generators to power electrical needs such as lights, pumps, and refrigerator units. These generators emit an array of pollutants, primarily NO_x, SO_x, and small particulate matter (PM_{10} and $PM_{2.5}$). The Port is beginning to provide shore-based electricity as an alternative to running the generators (a process also referred to as cold ironing). The AMP program allows ships to "plug-in" to shoreside electrical power while at dock instead of using on-board generators, a practice that will dramatically reduce emissions. Before being used at the Port, AMP was used commercially only by the cruise ship industry in Juneau, Alaska. Now, AMP facilities have been installed and are currently in use at China Shipping and the Yusen Terminals with plans for additional facilities at the Evergreen Terminal, TraPac Terminal and Cruise Ship Terminal, among others. AMP has been incorporated into the CAAP as a project-specific measure.

- **OffPeak Program.** Extending cargo terminal operations by five night and weekend work shifts, the OffPeak program, managed by PierPass – an organization created by marine terminal operators – has been successful in increasing cargo movement, reducing truck waiting time inside port terminals and truck traffic during peak daytime commuting periods.

- **On-Dock Rail and the Alameda Corridor.** Use of rail for long-haul cargo is acknowledged as an air quality benefit. Four on-dock rail yards at the Port significantly reduce the number of short-distance truck trips (the trips that would normally convey containers to and from off-site rail yards). Combined, these intermodal facilities eliminate an estimated 1.4 million truck trips per year at the Port, and the emissions and traffic congestion that go along with them. A partner in the Alameda Corridor project, the Port is utilizing the corridor to transport cargo to downtown rail yards at 10 to 15 miles per hour faster than before. Use of the Alameda Corridor allows cargo to travel the 20 miles to downtown Los Angeles at a faster pace and promotes the use of rail versus truck. In addition, the Alameda Corridor eliminates 200 rail/street crossings and emissions produced by cars waiting on the streets as the trains pass.

- **Tugboat Retrofit Project.** The engines of several tugboats in the Port were replaced with ultra-low-emission diesel engines. This was the first time such technology had been applied to such a large engine. Emissions testing showed a reduction of more than 80 tons of NO_x per year, nearly three times better than initial estimates. Under the Carl Moyer Program, the majority of tugboats operating in the Los Angeles/Long Beach Port Complex have since been retrofitted.

- **Electric and Alternative Fuel Vehicles.** The Port has converted more than 35 percent of its fleet to electric or alternative-fuel vehicles. These include heavy-duty vehicles as well as passenger vehicles. The Port has proactively embarked on the use of emulsified fuels that are verified by the California Air Resources Control Board to reduce diesel particulates by more than 60 percent compared to diesel-powered equipment.

- **Electrified Terminal Operating Equipment.** The 57 ship-loading cranes currently in use at the Port run on electric power. In addition, numerous other terminal operations equipment has been fitted with electric motors.

- **Yard Equipment Retrofit Program.** Over the past 5 years, diesel oxidation catalysts have been applied to nearly all yard tractors at the Port. This program has been carried out with Port funds and funding from the Carl Moyer Program**.**

- **Vessel Speed Reduction Program.** Under this program oceangoing vessels slow down to 12 knots within 40 nautical miles of the entrance to Los Angeles Harbor, thus reducing emissions from main propulsion engines.

- **Greenhouse Gas Reduction.** Under a December 2007 agreement with the Attorney General's office, the Port will conduct a comprehensive inventory of port-related GHGs, tracking these emissions from their foreign sources to domestic distribution points throughout the United States, and port will annually report this data to the California Climate Action Registry. The annual report will include emissions of all ships bound to and from the Port of Los Angeles terminals, encompassing points of origin and destination; emissions of all rail transit to and from Port terminals, encompassing major rail cargo destination and distribution points in the United States; and emissions of all truck transit to and from Port terminals, encompassing major truck destinations and distribution points. The port-wide inventory will be conducted annually until AB 32 regulations become effective. Under the agreement, the Port will also construct a 10 megawatt photovoltaic solar system to offset approximately 17,000 metric tons of carbon dioxide equivalent annually. In addition to the recent agreement with the Attorney General, many of the environmental programs described in this section such as the Green Terminal Program, the Recycling Program, the Green Ports Program, and all of the air quality improvement programs described above, will also serve to reduce GHG emissions.

Water Quality

- **Clean Marinas Program.** To help protect water and air quality in the Harbor, the Port is developing a Clean Marinas Program (CMP). The program advocates that marina operators and boaters use best management practices — environmentally friendly alternatives to some common boating activities that may cause pollution or contaminate the environment. It also includes several innovative clean water measures unique to the Port. The CMP features both voluntary components and measures required through Port leases, California Environmental Quality Act (CEQA) mitigation requirements, or established federal, state, and local regulations.

- **Water Quality Monitoring.** The Port has been monitoring water quality at 31 established stations in San Pedro Bay since 1967, and the water quality today at the Port is among the best of any industrialized port in the world. Samples are tested on a monthly basis for dissolved oxygen, biological oxygen demand and temperature. Other observations are noted, such as odor, color, and the presence of oil, grease, and floating solids. The overall results of this long-term monitoring initiative show the tremendous improvement in harbor water quality that has occurred over the last four decades.

- **Cabrillo Beach Water Quality Improvements.** The Port is one of the few industrial ports in the world that also has a swimming beach. Inner Cabrillo Beach provides still water for families with small children. However, in recent years, upland runoff has resulted in high levels of bacteria in shoreline waters. The Port has invested hundreds of thousands of dollars in water circulation/quality models and studies to investigate the problem. Recently, the Port repaired storm drains and sewer lines and replaced poor-quality beach sand in this area as part of its commitment to make sure that Cabrillo Beach continues to be an important regional recreational asset.

- **Consolidated Slip Restoration Task Force.** The Port is part of a multi-agency task force, including USEPA, the USACE, and the Regional Water Quality Control Board, that is planning the clean-up of contaminated sediments in the Consolidated Slip. The Port has provided funding, staff support, and other support services to this effort that will clean up one of the most polluted areas in the harbor.

Habitat Management and Endangered Species

- **California Least Tern Site Management.** The federal- and State-endangered California least tern (a species of small sea bird) nests from April through August on Pier 400 in the Port of Los Angeles adjacent to the Pier 400 container terminal. Through and interagency nesting site agreement, the Port maintains, monitors, and protects the 15-acre nesting site on Pier 400.

- **Interagency Biomitigation Team.** As part the development of mitigation for the Deep-Draft Navigation Improvements, including the Pier 400 Landfill, the San Pedro Bay Ports helped establish an interagency mitigation team to evaluate and provide solutions for impacts of landfill and terminal construction on marine resources in the Ports. The primary agencies involved include the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and the California Department of Fish and Game. A number of mitigation agreements have been established through this coordination, and it continues to meet as necessary to address environmental issues associated with Port development and operations.

General Port Environmental Programs

- **Green Ports Program and Pacific Rim Ports Conference.** The Ports of Los Angeles and Shanghai have signed an agreement to share technology aimed at improving air quality, improving water quality, and mitigating environmental impacts on the operations of the two ports. As a result of this collaboration, the Ports have now conducted staff exchanges and are co-founders of the Pacific Rim Ports Conference. The first of these conferences was held in Los Angeles in 2006 and hosted over 20 Pacific Rim Ports.

- **Recycling.** The Port incorporates a variety of environmental concepts into its construction projects. For example, when building an on-dock rail facility, the Port saved nearly $1 million and thousands of cubic yards of landfill space by recycling existing asphalt pavement instead of purchasing new pavement. The Port also maintains an annual contract to crush and recycle broken concrete and asphalt. In addition, the Port has successfully used recycled plastic products, such as fender piles and protective front-row piles, in many wharf construction projects.

- **Green Building Policy.** In August 2007, the Port adopted this policy, which outlines the environmental goals for newly constructed and existing buildings; dictates the incorporation of solar power and technologies that are efficient with respect to the use of energy and water; dedicates staffing for the advancement and refinement of sustainable building practices; and maintains communication with other City Departments for the benefit of the community. The policy incorporates sustainable building design and construction guidelines based on the United States Green Building Council – Leadership in Energy and Environmental Design (USGBC – LEED) Green Building Rating System.

Port of Los Angeles Sustainable Construction Guidelines

The Port adopted the Port of Los Angeles Sustainable Construction Guidelines in February 2008. The guidelines will be used to establish air emission criteria for inclusion in construction bid specifications. The guidelines will reinforce and require sustainability measures during performance of the contracts, balancing the need to protect the environment, be socially responsible, and provide for the economic development of the Port. Future resolutions are anticipated to expand the guidelines to cover other aspects of construction, as well as planning and design. These guidelines support the forthcoming Port Sustainability Program.

The intent of the Sustainable Construction Guidelines is to facilitate the integration of sustainable concepts and practices into all capital projects at the Port, and to phase-in the implementation of these procedures in a practical yet aggressive manner. These guidelines will be made a part of all construction specifications advertised for bids.

Significant features of these Guidelines include, but are not limited to:

- All ships & barges used primarily to deliver construction related materials for Los Angeles Harbor Department (LAHD) construction contracts shall comply with the Vessel Speed Reduction Program and use low-sulfur fuel within 40 nautical miles of Point Fermin.
- Harbor craft shall meet USEPA Tier-2 engine emission standards, and the requirement will be raised to USEPA Tier-3 engine emission standards by January 1, 2011.
- All dredging equipment shall be electric.
- On-road heavy-duty trucks shall comply with USEPA 2004 on-road emission standards for PM10 and NO_x and shall be equipped with a CARB verified Level 3 device. Emission standards will be raised to USEPA 2007 on-road emission standards for PM10 and NO_x by January 1, 2012.
- Construction equipment (excluding on-road trucks, derrick barges, and harbor craft) shall meet Tier-2 emission off-road standards. The requirement will be raised to Tier-3 by January 1, 2012, and Tier-4 by January 1, 2015. In addition, construction equipment shall be retrofitted with a California Air Resources Board (CARB) certified Level 3 diesel emissions control device.
- Comply with SCAQMD Rule 403 regarding Fugitive Dust, and other fugitive dust control measures.
- Additional Best Management Practices, based largely on Best Available Control Technology (BACT), will be required on construction equipment (including on-road trucks) to further reduce air emissions.

1.3.3 Port of Los Angeles Leasing Policy

On February 1, 2006, the Board of Harbor Commissioners approved a comprehensive Leasing Policy for the Port of Los Angeles that not only establishes a formalized, transparent process for tenant selection but also includes environmental requirements as a provision in Port leases.

Specific emission-reducing provisions contained in the Leasing Policy are:

- Compliance with VSRPs

- Use of clean AMP or cold-ironing technology, plugging into shoreside electric power while at dock, where appropriate
- Use of low-sulfur fuel in main and auxiliary engines while sailing within the boundaries of the South Coast Air Basin
- Use of clean, low-emission trucks within terminal facilities.

1.3.4 Aesthetic Mitigation Projects

For years 2003 through 2007, the Port is depositing $4 million per year into a community aesthetic mitigation account to mitigate the aesthetic impacts of Port operations on the neighboring communities of San Pedro and Wilmington consistent with the Berth 100 Amended Stipulated Judgment. All projects funded under this program shall comply with all applicable laws, rules, and regulations; be Port-related projects on Port land; or be projects not on Port land that have a demonstrable nexus or connection to the environmental, aesthetic, and/or public health impacts of the Port's operations and facilities. Proposed Projects to receive funding shall fall within the following categories, and shall be prioritized as follows:

- Open space and parks,
- Landscaping and beautification, or
- Educational, arts, and athletic facilities.

Proposed projects funded under this program shall be divided as evenly as possible between the San Pedro and Wilmington communities. Proposed projects must:

- Mitigate existing or future impacts of Port operations on surrounding communities,
- Be consistent with the State Tidelands Trust and the public trust doctrine,
- Be consistent with the Los Angeles City Charter, and
- Be consistent with the California Coastal Act, and consistent with any other applicable laws and regulations.

1.3.5 Port Community Advisory Committee

The Port Community Advisory Committee (PCAC) was established in 2001 as a standing committee of the Port of Los Angeles Board of Harbor Commissioners (Board). The purposes of the PCAC are to:

- Assess the impacts of Port developments on the harbor area communities and recommend suitable mitigation measures to the Board for such impacts;

- Review past, present, and future environmental documents in an open public process and make recommendations to the Board to ensure that impacts to the communities are appropriately mitigated in accordance with federal and California law; and

- Provide a public forum and make recommendations to the Board to assist the Port in taking a leadership role in creating balanced communities in Wilmington, Harbor City, and San Pedro so that the quality of life is maintained and enhanced by the presence of the Port.

1.4 Changes to the Draft SEIS/SEIR

This section of the Final SEIS/SEIR discusses general changes and modifications that have been made to the Draft SEIS/SEIR. Actual changes to the text, organized by Draft SEIS/SEIR sections, can be found in Chapter 3, "Modifications to the Draft SEIS/SEIR Text," of this Final SEIS/SEIR. The changes to the Draft SEIS/SEIR are primarily editorial in nature and have been made for the purpose of correcting and clarifying information contained within the Draft SEIS/SEIR based on comments received from the public.

Changes noted in Chapter 3 are identified by text strikeout and underline. These changes are referenced in Chapter 2 of this Final SEIS/SEIR, "Responses to Draft SEIS/SEIR Comments," where applicable. The project description is presented in its entirety above, incorporating the editorial changes noted in the "Response to Comments," and other minor corrections.

The changes and clarifications presented in Chapter 3 were reviewed to determine whether or not they warranted re-circulation of the Draft SEIS/SEIR prior to certification of the SEIS/SEIR according to CEQA and NEPA Guidelines and Statutes. The changes would not result in any new significant environmental impacts or a substantial increase in the severity of an existing environmental effect. In response to public comments, changes and/or clarifications have been made in the following sections of the Draft SEIS/SEIR:

- Section 1.0 – Introduction
- Section 2.0 – Project Description
- Section 3.1 – Aesthetics/Visual
- Section 3.2 – Air Quality and Meteorology
- Section 3.3 – Biological Resources
- Section 3.4 – Cultural Resources
- Section 3.5 – Geology
- Section 3.6 – Ground Transportation and Circulation

- Section 3.7 – Groundwater and Soils
- Section 3.9 – Marine Transportation
- Section 3.10 – Noise
- Section 3.12 – Risk of Upset/Hazardous Materials
- Section 3.14 – Water Quality, Sediments, and Oceanography
- Chapter 4 – Cumulative
- Chapter 10 – References
- Chapter 11 – List of Preparers
- Chapter 12 – Acronyms, Abbreviations, and Glossary
- Appendix D1 – Throughput and Vessel Mix Methodology
- Appendix E – Project Description Detailed Elements
- Appendix H2 – Operation Emissions
- Appendix J – Biological Assessment
- Appendix K – Essential Fish Habitat Assessment
- Appendix Q – Draft Section 404(b)(1) Alternatives Analysis

The above changes are consistent with the findings contained in the environmental impact categories in Chapter 3 of the Draft SEIS/SEIR, “Environmental Analysis”, as amended, namely, that there would be no new or increased significant effects on the environment due to the above project changes, and no new alternatives have been identified that would reduce significant effects of the proposed project. Therefore, the Draft SEIS/SEIR does not need to be re-circulated, and the SEIS/SEIR can be certified without additional public review, consistent with Public Resource Code Section 21092.1 and CEQA Guidelines Section 15088.5, and NEPA regulations in 40 CFR 1502 and 1503.

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