Section 3.2
Air Quality and Meteorology

3.2.1 Introduction

Emissions from construction and operation of the proposed Project and alternatives would affect air quality in the immediate Project area and the surrounding region. This section includes a description of the affected air quality environment, predicted impacts of the proposed Project and alternatives, and mitigation measures that would reduce significant impacts.

3.2.2 Environmental Setting

The Project site is located in the Harbor District of the City of Los Angeles, within the South Coast Air Basin. The South Coast Air Basin consists of the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties and all of Orange County. The air basin covers an area of approximately 6,000 square miles and is bounded on the west by the Pacific Ocean; on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains; and on the south by the San Diego County line.

3.2.2.1 Regional Climate and Meteorology

The climate of the Project region is classified as Mediterranean, characterized by warm, rainless summers and mild, wet winters. The major influence on the regional climate is the Eastern Pacific High (a strong persistent area of high atmospheric pressure over the Pacific Ocean), topography, and the moderating effects of the Pacific Ocean. Seasonal variations in the position and strength of the High are a key factor in the weather changes in the area.

The Eastern Pacific High attains its greatest strength and most northerly position during the summer, when the High is centered west of northern California. In this location, the High effectively shelters Southern California from the effects of polar storm systems. Large-scale atmospheric subsidence associated with the High produces an elevated temperature inversion along the West Coast. The base of this subsidence inversion is generally from 1,000 to 2,500 feet (300 to 800 meters) above mean sea level (msl) during the summer. Vertical mixing is often limited to the base of the inversion, and air pollutants are trapped in the lower atmosphere. The mountain ranges that surround the Los Angeles Basin constrain the horizontal movement of air and also inhibit the dispersion of air pollutants out of the region. These two factors, combined with the air pollution sources of over 15 million people, are responsible for the high pollutant concentrations that can occur in the South Coast Air Basin. In addition, the warm temperatures and high solar radiation during the summer months promote the formation of ozone (O_3), which has its highest levels during the summer.

The proximity of the Eastern Pacific High and a thermal low pressure system in the desert interior to the east produce a sea breeze regime that prevails within the Project region for most of the year, particularly during the spring and summer months. Sea breezes at the Port typically increase during the morning hours from the southerly direction and reach a peak in the afternoon as they blow from the southwest. These winds generally subside after sundown. During the warmest months of the year, however, sea breezes could persist well into the nighttime hours. Conversely, during the colder months of the year, northerly land breezes increase by sunset and into the evening hours. Sea breezes transport air pollutants away from the coast and towards the interior regions in the afternoon hours for most of the year.

During the fall and winter months, the Eastern Pacific High can combine with high pressure over the continent to produce light winds and extended inversion conditions in the region. These stagnant atmospheric conditions often result in elevated pollutant concentrations in the South Coast Air Basin. Excessive buildup of high pressure in the Great Basin region can produce a "Santa Ana" condition, characterized by warm, dry, northeast winds in the basin and offshore regions. Santa Ana winds often ventilate the South Coast Air Basin of air pollutants.

The Palos Verdes Hills have a major influence on wind flow in the Port. For example, during afternoon southwest sea breeze conditions, the Palos Verdes Hills often block this flow and create a zone of lighter winds in the inner Harbor area of the Port. During strong sea breezes, this flow can bend around the north side of the Hills and end up as a northwest breeze in the inner Harbor area. This topographic feature also deflects northeasterly land breezes that flow from the coastal plains to a more northerly direction through the Port.

3.2.2.2 Criteria Pollutants and Air Monitoring

Criteria Pollutants

Air quality at a given location can be characterized by the concentration of various pollutants in the air. Units of concentration are generally expressed as ppmv or micrograms per cubic meter ($\mu g/m^3$) of air. The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national or state ambient air quality standard. These standards represent the allowable atmospheric concentrations at which the public health and welfare are protected. They include a reasonable margin of safety to protect the more sensitive individuals in the population.

USEPA establishes the National Ambient Air Quality Standards (NAAQS). For most pollutants, maximum concentrations shall not exceed an NAAQS more than once per year; and they shall not exceed the annual standards. The California Air Resources Board (CARB) establishes the California Ambient Air Quality Standards (CAAQS), which are generally more stringent and include more pollutants than the NAAQS. California standards for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter less than 10 microns (µm) in diameter (PM_{10}), and particulate matter less than 2.5 µm in diameter ($PM_{2.5}$) are values not to be exceeded. All other standards are not to be equaled or exceeded.

Pollutants that have corresponding national or state ambient air quality standards are known as criteria pollutants. These pollutants can harm human health and the environment, and cause property damage. These pollutants are called "criteria" air pollutants because they are regulated by developing human health-based and/or environmentally based criteria (science-based guidelines) for setting permissible levels. The set of limits based on human health is called the primary standards. Another set of limits intended to prevent environmental and property damage is called the secondary standards. The criteria pollutants of greatest concern in this air quality assessment are ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. NO_X and SO_X are the generic terms for NO_2 and SO_2, respectively, because NO_2 and SO_2 are naturally highly reactive and may change composition when exposed to oxygen, other pollutants, and/or sunlight in the atmosphere. These oxides are produced during combustion.

As discussed above, one of the main concerns with criteria pollutants is that they contribute directly to regional human health problems. The known adverse effects associated with these criteria pollutants are shown in Table 3.2-1.

Of the criteria pollutants of concern, ozone is unique because it is not directly emitted from Project-related sources. Rather, ozone is a secondary pollutant, formed from the precursor pollutants volatile organic compounds (VOC) and nitrogen oxides (NO_X). VOC and NO_X react to form ozone in the presence of sunlight through a complex series of photochemical reactions. As a result, unlike inert pollutants, ozone levels usually peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty in predicting photochemical pollutant concentrations, ozone impacts are indirectly addressed in this study by comparing Project-generated emissions of VOC and NO_X to daily emission thresholds set by the South Coast Air Quality Management District (SCAQMD). These emission thresholds are discussed in Section 3.2.4.2 (Significance Criteria).

Generally, concentrations of photochemical pollutants, such as ozone, are highest during the summer months and coincide with the season of maximum solar insolation. Concentrations of inert pollutants, such as CO, tend to be the greatest during the winter months and are a product of light wind conditions and surface-based temperature inversions that are frequent during that time of year. These conditions limit atmospheric dispersion. However, in the case of PM_{10} impacts from fugitive dust sources, maximum concentrations may occur during high wind events or near man-made ground-disturbing activities, such as vehicular activities on roads and earth moving during construction activities.

Because most of the Project-related emission sources would be diesel-powered, diesel particulate matter (DPM) is a key pollutant evaluated in this analysis. DPM is one of the components of ambient PM_{10} and $PM_{2.5}$. DPM is also classified as a toxic air contaminant by the CARB. As a result, DPM is evaluated in this study both as a criteria pollutant (as a component of PM_{10} and $PM_{2.5}$) and as a toxic air contaminant.

Table 3.2-1. Adverse Effects Associated with the Criteria Pollutants

Pollutant	Adverse Effects
Ozone (O_3)	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals and (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide (CO)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide ($N0_2$)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide (SO_2)	(a) Broncho-constriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma
Suspended Particulate Matter less than 10 Microns (PM_{10})	(a) Excess deaths from short-term and long-term exposures; (b) excess seasonal declines in pulmonary function, especially in children; (c) asthma exacerbation and possibly induction; (d) adverse birth outcomes including low birth weight; (e) increased infant mortality; (f) increased respiratory symptoms in children such as cough and bronchitis; and (g) increased hospitalization for both cardiovascular and respiratory disease (including asthma) [a]
Suspended Particulate Matter less than 2.5 microns ($PM_{2.5}$)	(a) Excess deaths from short-term and long-term exposures; (b) excess seasonal declines in pulmonary function, especially in children; (c) asthma exacerbation and possibly induction; (d) adverse birth outcomes including low birth weight; (e) increased infant mortality; (f) increased respiratory symptoms in children such as cough and bronchitis; and (g) increased hospitalization for both cardiovascular and respiratory disease (including asthma)[a]
Lead [b]	(a) Increased body burden; (b) impairment of blood formation and nerve conduction, and neurotoxin.
Sulfates [c]	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardiopulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage

Source: (SCAQMD, 2007).

[a]More detailed discussions on the health effects associated with exposure to suspended particulate matter can be found in the following documents: OEHHA, *Particulate Matter Health Effects and Standard Recommendations* (www.oehha.ca.gov/air/toxic_contaminants/PM_{10}notice.html#may), May 9, 2002; and U.S. EPA, *Air Quality Criteria for Particulate Matter*, October 2004.

[b]Lead emissions were evaluated in the health risk assessment of this study. Screening calculations have shown that lead emissions would be below the SCAQMD emission thresholds for all Project alternatives.

[c]Sulfate emissions were evaluated in the health risk assessment of this study. The SCAQMD has not established an emissions threshold for sulfates, nor does it require dispersion modeling against the localized significance thresholds (LSTs).

[d]California Ambient Air Quality Standards have also been established for hydrogen sulfide, vinyl chloride, and visibility reducing particles. They are not shown in this table because they are not pollutants of concern for the proposed Project.

Local Air Monitoring Levels

USEPA designates all areas of the United States according to whether they meet the NAAQS. A nonattainment designation means that a primary NAAQS has been exceeded more than once per year in a given area. USEPA currently designates the South Coast Air Basin as an “extreme” nonattainment area for 1-hour ozone, a nonattainment area for 8-hour ozone, a nonattainment area for both CO[1] and PM_{10}, and a nonattainment area for $PM_{2.5}$. The South Coast Air Basin is in attainment of the NAAQS for SO_2, NO_2, and lead (USEPA, 2005). States with nonattainment areas must prepare a State Implementation Plan (SIP) that demonstrates how those areas will come into attainment.

The CARB also designates areas of the state according to whether they meet the CAAQS. A nonattainment designation means that a CAAQS has been exceeded more than once in 3 years. The CARB currently designates the South Coast Air Basin as an “extreme” nonattainment area for 1-hour ozone, and a nonattainment area for both PM_{10}, and $PM_{2.5}$. The air basin is in attainment of the CAAQS for CO, SO_2, NO_2, sulfates, and lead, and is unclassified for hydrogen sulfide and visibility reducing particles.

The Port has been conducting its own air quality monitoring program since February 2005. The main objective of the program is to estimate ambient levels of DPM near the Port. The secondary objective of the program is to estimate ambient particulate matter levels within adjacent communities due to Port emissions. To achieve these objectives, the program measures ambient concentrations of PM_{10}, $PM_{2.5}$, and elemental carbon $PM_{2.5}$ (which indicates fossil fuel combustion sources) at four locations in the Port vicinity (POLA, 2006). The station locations are:

- Wilmington Station – Located at the Saints Peter and Paul School. This station measures aged urban emissions during offshore flows and a combination of marine aerosols, aged urban emissions, and fresh emissions from Port operations during onshore flows. This station also provides information on the relative strengths of these source combinations. Meteorological data from this site and the Berth 47 site (described below) were used in this air quality analysis to model human health risks and criteria pollutant impacts associated with the proposed Project.
- Coastal Boundary Station – Located at Berth 47 in the Port Outer Harbor. This station measures aged urban and Port emissions and marine aerosols during onshore flows and aged urban emissions and fresh Port emissions during offshore flows. Meteorological data from this site and the Wilmington site (described above) were used in this air quality analysis to model human health risks and criteria pollutant impacts associated with the proposed Project.
- Source-Dominated Station – Located at the Terminal Island Treatment Plant. This site is surrounded by three terminals and has a potential to receive emissions from off-road equipment, on-road trucks, and rail. During onshore flows, this station measures marine aerosols and fresh emissions from several nearby diesel-fired sources (trucks, trains, and ships). During offshore flows, this station measures aged urban emissions and Port emissions.

[1]The South Coast Air Basin has been achieving the Federal 1-hour CO air quality standard since 1990, and the Federal 8-hour CO standard since 2002. However, the South Coast Air Basin is still considered a nonattainment area until a petition for redesignation is submitted by the State and is approved by USEPA. A redesignation to attainment has already been made for the State CO standards.

- San Pedro Station – Located at the Liberty Hill Plaza Building, adjacent to the Port administrative property on Palos Verdes Street. This location is near the western edge of Port operational emission sources and adjacent to residential areas in San Pedro. During onshore flows, aged urban emissions, marine aerosols, and fresh Port emissions have the potential to affect this site. During nighttime offshore flows, this site measures aged urban emissions and Port emissions.

As discussed below, the Port has collected PM_{10} data for 2 years at its Wilmington station, and $PM_{2.5}$ data at all four of its stations for 2 years. However, to show trends in pollutant concentrations over periods longer than 2 years, and for criteria pollutants other than PM_{10} and $PM_{2.5}$, it was necessary to use data from the network of monitoring stations operated by the SCAQMD.

Of the SCAQMD monitoring stations, the most representative station for the Project vicinity is the North Long Beach station because it is the closest SCAQMD station to the Project site. Table 3.2-2 shows the highest pollutant concentrations recorded at the North Long Beach station for 2004 to 2006, the most recent complete 3-year period of data available. As shown in the table, the following standards were exceeded at the North Long Beach station over the 3-year period: ozone (state 1-hour standards), PM_{10} (state 24-hour and annual standards), and $PM_{2.5}$ (national 24-hour standard, and national and state annual standards). No standards were exceeded for CO, NO_2, SO_2, lead, and sulfates; although some data were not available for SO_2, lead, and sulfates between 2004 and 2006.

Pollutant sampling data for February 2006 through January 2007 from the Port monitoring program are available. Samples are collected as 24-hour averages every 3 days. The data are summarized in Table 3.2-3. Data collected concurrently at the SCAQMD North Long Beach monitoring station are also presented for comparison. The table shows that for PM_{10}, concentrations at the Wilmington station are lower than the North Long Beach station. For $PM_{2.5}$, concentrations at the Port Monitoring Sites are lower than the North Long Beach station for maximum 24-hour averages, and comparable to the North Long Beach station for period averages. For elemental carbon $PM_{2.5}$, the Source-Dominated station has the highest concentrations, and the Coastal Boundary station has the lowest concentrations. Elemental carbon $PM_{2.5}$ was not measured at the North Long Beach station.

Air quality within the South Coast Air Basin has generally improved since the inception of air pollutant monitoring in 1976. This improvement is mainly due to lower-polluting on-road motor vehicles, more stringent regulation of industrial sources, and the implementation of emission reduction strategies by the SCAQMD. This trend towards cleaner air has occurred in spite of continued population growth.

Toxic Air Contaminants

Toxic air contaminants (TACs) are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). TACs include air pollutants that can produce adverse human health effects, including carcinogenic effects, after short-term (acute) or long-term (chronic) exposure. Examples of TAC sources within the South Coast Air Basin include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources.

Table 3.2-2. Maximum Pollutant Concentrations Measured at the North Long Beach Monitoring Station

Pollutant	Averaging Period	National Standard	State Standard	Highest Monitored Concentration		
				2004	2005	2006
Ozone (ppm)	1 hour	na	0.09	0.090	**0.091**	0.077
	8 hours	0.075	0.07	0.074	0.068	0.058
CO (ppm)	1 hour	35	20	4.2	5.0	4.2
	8 hours	9	9	3.4	3.7	3.4
NO_2 (ppm)	1 hour	n/a	0.18	0.12	0.12	0.102
	Annual	0.053	0.030	0.028	0.024	0.022
SO_2 (ppm)	1 hour	n/a	0.25	not avail.	0.04	0.027
	24 hours	0.14	0.04	0.013	0.010	0.010
	Annual	0.03	n/a	0.005	0.002	0.002
PM_{10} ($\mu g/m^3$)	24 hours	150	50	**72** [b]	**66** [b]	**78**
	Annual	na	20	**33.1**	**29.7**	**31**
$PM_{2.5}$ ($\mu g/m^3$)	24 hours	35	n/a	**66.6** [c]	**53.8**	**59**
	Annual	15	12	**17.8**	**16.0**	**14.1**
Lead ($\mu g/m^3$)	30 days	n/a	1.5	not avail.	not avail.	not avail.
	Calendar quarter	1.5	n/a	not avail.	not avail.	not avail.
Sulfates ($\mu g/m^3$)	24 hours	n/a	25	not avail.	not avail.	not avail.

Note: Exceedances of the standards are highlighted in bold. Although the NAAQS were not exceeded at the North Long Beach Monitoring Station for carbon monoxide and PM_{10} from 2004 to 2006, the South Coast Air Basin is classified by USEPA as nonattainment for these pollutants because violations have occurred at other monitoring stations in the Basin.

[a] The state 1-hour ozone standard was exceeded on 0 days in 2004, 1 day in 2005, and 0 days in 2006.
The national 1-hour ozone standard was not exceeded.

[b] The state 24-hour PM_{10} standard was exceeded on 2 of 57 (4 percent) sampled days in 2004. There were 4 exceedances of the state 24-hour PM_{10} standard in 2005 and 5 exceedances of the state 24-hour PM_{10} standard in 2006. The national 24-hour PM_{10} standard was not exceeded.

[c] The national 24-hour $PM_{2.5}$ standard was exceeded on 1 day in 2004, 0 days in 2005, and 0 days in 2006.

Source: SCAQMD (www.aqmd.gov); CARB (http://www.arb.ca.gov/adam/welcome.html);
USEPA (http://www.epa.gov/aqspubl1/)

$\mu g/m^3$ micrograms per cubic meter

ppm parts per million

Table 3.2-3. Maximum Pollutant Concentrations Measured for the Port Air Quality Monitoring Program

Pollutant	Averaging Period	Port of Los Angeles Monitoring Sites				SCAQMD Monitoring Site
		Wilmington Community Site	Coastal Boundary Site	San Pedro Community Site	Source-Dominated Site	North Long Beach
PM_{10} ($\mu g/m^3$)	24 hours	**60.5**	--	--	--	**64**
	Period Average	**27.8**	--	--	--	**30.7**
$PM_{2.5}$ ($\mu g/m^3$)	24 hours	**36.2**	25.9	23.8	31.4	**49.8**
	Period Average	**12.4**	9.8	10.6	**13.5**	**13.5**
Elemental Carbon $PM_{2.5}$ ($\mu g/m^3$)	24 hours	5.2	4.6	6.7	9.3	--
	Period Average	1.5	1.1	1.5	2.5	--

Notes:

a) For PM_{10}, the SCAQMD North Long Beach monitoring site measures a 24-hour sample every 6 days, compared to every 3 days for the Port monitoring sites. Therefore, only one-half of the Port monitoring site samples (every other sample) has a corresponding sample from the North Long Beach site. For $PM_{2.5}$, all monitoring sites measure a 24-hour sample every 3 days.

b) The Port PM_{10} and $PM_{2.5}$ data were collected between February 2006 and January 2007. The Port elemental carbon $PM_{2.5}$ data were collected between February 2005 and January 2006. Data from the SCAQMD North Long Beach monitoring sites were collected between February 2006 and December 2006.

c) PM_{10} is not measured at the Coastal Boundary site, San Pedro Community site, or Source-Dominated site.

d) Elemental Carbon $PM_{2.5}$ is not measured at the SCAQMD North Long Beach site.

e) Exceedances of the standards are highlighted in bold. The period average concentrations were evaluated against the annual standards.

Source: POLA, 2006.

The SCAQMD determined in the *Multiple Air Toxics Exposure Study II* (MATES II) that about 70 percent of the background airborne cancer risk in the South Coast Air Basin is due to particulate emissions from diesel-powered on- and off-road motor vehicles (SCAQMD, 2000). The higher risk levels were found in the urban core areas in south central Los Angeles County, in Wilmington adjacent to the Port, and near freeways.

In January 2008, the SCAQMD released the draft MATES III study (SCAQMD, 2008). Mates III determined that diesel exhaust remains the major contributor to air toxics risk, accounting for approximately 84 percent of the total risk. Compared to the MATES II study, the MATES III study found a decreasing risk for air toxics exposure, with the population-weighted risk down by 17 percent from the analysis in MATES II.

Furthermore, a recently released CARB report titled *Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach* indicates that the Ports contributed approximately 21 percent of the total diesel PM emissions in the air basin during 2002 (CARB, 2006b). These emissions are reported to result in elevated cancer risk levels over the entire 20-mile by 20-mile study area.

As discussed in Section 1.7.6, the Port of Los Angeles, in conjunction with the Port of Long Beach, has developed the San Pedro Bays Clean Air Action Plan (CAAP) that targets all emissions, but is focused primarily on TACs. Additionally, all major development projects will include a Health Risk Assessment to further assess TAC emissions and to target mitigation to reduce the impact on public health.

Secondary $PM_{2.5}$ Formation

Within the South Coast Air Basin, $PM_{2.5}$ particles both are directly emitted into the atmosphere (e.g., primary particles) and are formed through atmospheric chemical reactions from precursor gases (e.g., secondary particles). Primary $PM_{2.5}$ includes diesel soot, combustion products, road dust, and other fine particles. Secondary $PM_{2.5}$, which includes products such as sulfates, nitrates, and complex carbon compounds, are formed from reactions with directly emitted NO_X, SO_X, VOCs, and ammonia (SCAQMD, et al 2006). Project-generated emissions of NO_X, SO_X, and VOCs would contribute toward secondary $PM_{2.5}$ formation some distance downwind of the emission sources. However, the air quality analysis in this EIR focuses on the effects of direct $PM_{2.5}$ emissions generated by the proposed Project and their ambient impacts. This approach is consistent with the recommendations of the SCAQMD (SCAQMD 2006d).

Ultrafine Particles

Although USEPA and the State of California currently monitor and regulate PM_{10} and $PM_{2.5}$, new research is being done on ultrafine particles (UFP), particles classified as less than 0.1 micron in diameter. UFPs are formed usually by a combustion cycle, independent of fuel type. With diesel fuel, UFPs can be formed directly from the fuel during combustion. With gasoline and natural gas (liquefied or compressed), the UFPs are derived mostly from the lubricant oil. UFPs are emitted directly from the tailpipe as solid particles (soot—elemental carbon and metal oxides) and semivolatile particles (sulfates and hydrocarbons) that coagulate to form particles.

The research regarding UFPs is at its infancy but suggests the UFPs might be more dangerous to human health than the larger PM_{10} and $PM_{2.5}$ particles (termed fine particles) due to size and shape. Because of the smaller size, UFPs are able to travel more deeply into the lung (the alveoli) and are deposited in the deep lung regions more efficiently than fine particles. UFPs are inert; therefore, normal bodily defense does not recognize the particle. UFPs might have the ability to travel across cell layers and enter into the bloodstream and/or into individual cells. With a large surface area-to-volume ratio, other entities might attach to the particle and travel into the cell as a kind of "hitchhiker."

Current UFP research primarily involves roadway exposure. Preliminary studies suggest that over 50 percent of an individual's daily exposure is from driving on highways. Levels appear to drop off rapidly as one moves away from major roadways. Little research has been done directly on ships and off-road vehicles. CARB is currently measuring and studying UFPs at the San Pedro Bay Ports. Work is being done on filter technology, including filters for ships, which appears promising. The Port actively participates in the CARB testing at the Port and will comply with all future regulations regarding UFPs. In addition, measures included in the CAAP aim to reduce all emissions Portwide.

Atmospheric Deposition

The fallout of air pollutants to the surface of the earth is known as atmospheric deposition. Atmospheric deposition occurs in both a wet and dry form. Wet deposition occurs in the form of precipitation or cloud water and is associated with the conversion in the atmosphere of directly emitted pollutants into secondary pollutants such as acids. Dry deposition occurs in the form of directly emitted pollutants or the conversion of gaseous pollutants into secondary PM. Atmospheric deposition can produce watershed acidification, aquatic toxic pollutant loading, deforestation, damage to building materials, and respiratory problems.

The CARB and California Water Resources Control Board are in the process of examining the need to regulate atmospheric deposition for the purpose of protecting both fresh and saltwater bodies from pollution. Port emissions deposit into both local waterways and regional land areas. Emission sources from the proposed Project Alternatives would produce DPM, which contains trace amounts of toxic chemicals. Through the CAAP, the Port will reduce air pollutants from its future operations, which will work towards the goal of reducing atmospheric deposition for purposes of water quality protection. The CAAP will reduce air pollutants that generate both acidic and toxic compounds, include emissions of NO_X, SO_X, and DPM.

Greenhouse Gas Emissions

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). GHGs are emitted by natural processes and human activities. Examples of GHGs that are produced both by natural processes and industry include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride.

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural GHGs, the earth's surface would be about 61°F cooler (AEP, 2007). However, emissions from fossil fuel combustion for activities such as electricity production and vehicular transportation have elevated the concentration of GHGs in the atmosphere above natural levels. According to the Intergovernmental Panel on Climate Change (IPCC, 2007), the atmospheric concentration of CO_2 in 2005 was 379 ppm compared to the pre-industrial levels of 280 ppm. In addition, the Fourth U.S. Climate Action Report concluded, in assessing current trends, that carbon dioxide emissions increased by 20 percent from 1990 to 2004, while methane and nitrous oxide emissions decreased by 10 percent and 2 percent, respectively.

There appears to be a close relationship between the increased concentration of GHGs in the atmosphere and global temperatures. For example, the California Climate Change Center reports that by the end of this century, average global surface temperatures could rise by 4.7 to 10.5ºF due to increased GHG emissions. Scientific evidence indicates a trend of increasing global temperatures near the earth's surface over the past century due to increased human-induced levels of GHGs.

GHGs differ from criteria pollutants in that GHG emissions do not cause direct adverse human health effects. Rather, the direct environmental effect of GHG emissions is the increase in global temperatures, which in turn has numerous indirect effects on the environment and humans. For example, some observed changes include shrinking glaciers, thawing permafrost, later freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, and earlier flowering of trees (IPCC, 2001). Other, longer term environmental impacts of global warming may include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack. (For example, estimates include a 30 to 90 percent reduction in snow pack in the Sierra Nevada mountain range). Current data suggest that in the next 25 years, in every season of the year, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. More specifically, the California Climate Change Center (2006) predicted that California could witness the following events:

- Temperature rises between 3 to 10.5ºF
- 6 to 20 inches or more of sea level rise
- 2 to 4 times as many heat-wave days in major urban centers
- 2 to 6 times as many heat-related deaths in major urban centers
- 1 to 1.5 times more critically dry years
- 10 to 55 percent increase in the risk of wildfires

Currently, there are no federal standards for GHG emissions. Recently, the U.S. Supreme Court ruled that the harms associated with climate change are serious and well recognized, that the U.S. EPA must regulate GHGs as pollutants, and unless the agency determines that GHGs do not contribute to climate change, it must promulgate regulations for GHG emissions from new motor vehicles (*Massachusetts et al. Environmental Protection Agency* [case No. 05-1120], 2007). However, no federal regulations have been set at this time. Currently, control of GHGs is generally regulated at the state level and approached by setting emission reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans.

To date, 12 states, including California, have set state GHG emission targets. Executive Order S-3-05 and the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, promulgated the California target to achieve 1990 GHG levels by the year 2020. The target-setting approach allows progress to be made in addressing climate change, and is a forerunner to the setting of emission limits. A companion bill, Senate Bill (SB) 1368, similarly addresses global warming, but from the perspective of electricity generators selling power into the state. The legislation requires that imported power meet the same greenhouse gas standards that power plants in California meet. SB 1368 also sets standards for CO_2 for any long-term power production of electricity at 1,000 pounds per megawatt hour.

The World Resources Institute's GHG Protocol Initiative identifies six GHGs generated by human activity that are believed to be contributors to global warming (WRI/WBCSD, 2007):

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)

- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

These are the same six GHGs that are identified in California Assembly Bill (AB) 32 and by the USEPA. Appendix E1 contains descriptions of the natural and man-made sources of emissions for each of these GHGs.

The different GHGs have varying global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. By convention, CO_2 is assigned a GWP of 1. By comparison, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. N_2O has a GWP of 310, which means that it has a global warming effect 310 times greater than CO_2 on an equal-mass basis. To account for their GWPs, GHG emissions are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its GWP, and adding the results together to produce a single, combined emission rate representing all GHGs. Appendix E1 lists the GWP for each GHG.

The Project air quality analysis includes estimates of GHG emissions generated by the Project for existing and future conditions, as presented in Sections 3.2.2.3 and 3.2.4.3, respectively. In keeping with international convention, the GHG emissions in this report are expressed in metric units (metric tons [tonnes], in this case).

Sustainability and Port Climate Action Plan

In May 2007, the City of Los Angeles Mayor's Office released the Green LA initiative, which is an action plan to lead the nation in fighting global warming. The Green LA Plan presents a citywide framework for confronting global climate change to create a cleaner, greener, sustainable Los Angeles. The Green LA Plan directs the Port to develop an individual Climate Action Plan, consistent with the goals of Green LA, to examine opportunities to reduce GHG emissions from operations.

In accordance with this directive, the Sustainability and Climate Action Plan of the Port would cover all currently listed GHG emissions related to Port activities (such as Port buildings and Port workforce operations). The Port would complete annual GHG inventories of the Port and its customers and report these to the Climate Action Registry. The first of these inventories would be reported in 2008 for the year 2006.

The Port, as a Department of the City of Los Angeles and as a Port associated with a major City, is a participant in Clinton Climate Initiative as a C40 City. The Port is also a signatory to the California Sustainable Goods Movement Program and is participating in the University of Southern California Sustainable Cities Program, which is looking at GHGs associated with international goods movement.

3.2.2.3 China Shipping Terminal Baseline Emissions

For purposes specific to this Draft EIS/EIR, the CEQA baseline for determining the significance of potential Project impacts is the period prior to March 28, 2001, pursuant to the Amended Stipulated Judgment. In the baseline year (April 2000 through March 2001), the Berth 97-109 terminal was used as overflow container backlands for the adjacent Berth 121-131 terminal. No ships docked at the Berth 97-109 terminal in the baseline year.

The annual container throughput at the Berth 97-109 terminal in the baseline year ending March 2001 was estimated to be 45,135 TEUs. This throughput was estimated by counting containers on the terminal from aerial photographs taken at various times during the baseline year. Chapter 2 provides more detail on the derivation of the baseline container throughput.

Under CEQA, baseline conditions normally include environmental conditions in the vicinity of the proposed project site, or the area affected by the proposed project, during the baseline period. However, to ensure a conservative description of baseline conditions and to avoid understating project impacts, this document describes baseline conditions as including only activities that occurred on the site of the proposed Project (that is, the Berth 97-109 terminal) during the baseline period.

Because the Berth 97-109 terminal was used as overflow backlands for the Berth 121-131 terminal in the baseline year, only terminal equipment emissions were attributed to the CEQA baseline. Terminal equipment was used to move containers back and forth between the two terminals, and to stack and unstack the containers on the Berth 97-109 backlands. Other emission sources – including ships, tugboats, trucks, locomotives, and employee trips – were considered to be associated with Berth 121-131 operations only and, therefore, were not included in the baseline emissions.

Table 3.2-4 summarizes the average daily emissions associated with operation of the Berth 97-109 terminal in the baseline year. The average daily emissions represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day-to-day depending on the number of containers handled.

Table 3.2-4. CEQA Baseline (April 2000 – March 2001) Average Daily Operational Emissions

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Terminal Equipment	60	225	566	10	31	29
Total – CEQA Baseline	**60**	**225**	**566**	**10**	**31**	**29**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Because the Berth 97-109 terminal was used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations in the baseline year.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-5 summarizes the peak daily emissions associated with baseline year operations. Baseline peak daily emissions are compared to future Project peak daily emissions to determine CEQA significance for the proposed Project and alternatives. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the terminal. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently and are based upon a lesser known and therefore more theoretical set of conservative assumptions.

Table 3.2-5. CEQA Baseline (April 2000 – March 2001) Peak Daily Operational Emissions

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Terminal Equipment	161	607	1,523	28	85	78
Total - CEQA Baseline	**161**	**607**	**1,523**	**28**	**85**	**78**

Notes:

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Because the Berth 97-109 terminal was used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations in the baseline year.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The peak daily emissions for the CEQA baseline operations assume terminal equipment activity equivalent to 2.7 times the average level of activity. As described in Section 3.2.4.3, this peaking factor reflects the maximum theoretical container movement rates on and off the Berth 97-109 terminal. Peak container movement rates are generally tied to peak ship loading and unloading rates, peak on-dock train loading and unloading rates, and peak day container truck visits. However, because the Berth 97-109 terminal had no *directly* associated wharf, gate, or on-dock rail throughput in the baseline year, it was necessary to derive a peaking factor from activity level assumptions for the proposed Project. The peaking factor of 2.7 represents the peaking factor for the proposed Project, averaged over all analysis years. This factor was assumed to be representative of peak day baseline conditions.

Greenhouse Gas Emissions

Table 3.2-6 presents an estimate of the GHG emissions generated within California borders from the CEQA baseline year operations.[2] As discussed further in Section 3.2.3.2, the analysis of GHG emissions within the State of California is consistent with the goals of the California Climate Action Registry (CCAR). The emission sources for which baseline GHG emissions were calculated include terminal equipment and on-terminal electricity usage. The GHG emission calculation methodology is described in Appendix E1.

[2] In the case of electricity consumption, the GHG emissions may also be generated by out-of-state power plants.

Table 3.2-6. Annual Operational GHG Emissions – Berth 97-109 Terminal Project – CEQA Baseline (April 2000 – March 2001)

Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Terminal Equipment	2,223	0.8	0.03	0	0	0	2,247
On-Terminal Electricity Usage	210	0.002	0.001	0	0	0	210
CEQA Baseline Total	**2,433**	**1**	**0**	**0**	**0**	**0**	**2,457**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a.

3.2.2.4 Sensitive Receptors

The impact of air emissions on sensitive members of the population is a special concern. Sensitive receptor groups include children, the elderly, and the acutely and chronically ill. The locations of these groups include residences, schools, daycare centers, convalescent homes, and hospitals. The nearest sensitive receptors to the Project site include residents in eastern San Pedro and south Wilmington. Additionally, the Hawaiian Avenue Elementary School in Wilmington and the Barton Hill School at South Pacific Avenue and O'Farrell Street in San Pedro are about 1.3 and 0.5 miles away, respectively, from the proposed Berth 97-109 terminal. The nearest daycare center is the Toberman Child Care Center, about 0.7 mile southwest of the Project site. The nearest convalescent home is the Harbor View House, about 1 mile south of the Project site. The nearest hospital is the San Pedro Peninsula Hospital, about 1.5 miles southwest of the Project site.

3.2.3 Applicable Regulations

The Federal Clean Air Act of 1969 and its subsequent amendments established air quality regulations and the NAAQS, and delegated enforcement of these standards to the states. In California, the CARB is responsible for enforcing air pollution regulations. The CARB has, in turn, delegated the responsibility of regulating stationary emission sources to the local air agencies. In the South Coast Air Basin, the local air agency is the SCAQMD.

The following is a summary of the key federal, state, and local air quality rules, policies, and agreements that potentially apply to the Project and its related activities.

3.2.3.1 Federal Regulations

State Implementation Plan

In federal nonattainment areas, the Federal Clean Air Act (CAA) requires preparation of an SIP, detailing how the state will attain the NAAQS within mandated timeframes. In response to this requirement, the SCAQMD and the Southern California Association of Governments (SCAG) have jointly developed the *2007 Air Quality Management Plan (AQMP)*. The 2007 AQMP was adopted by the SCAQMD on June 1, 2007. The focus of the 2007 AQMP is to demonstrate compliance with the new NAAQS for $PM_{2.5}$ and 8-hour ozone and other planning requirements, including compliance with the NAAQS for PM_{10} (SCAQMD et al., 2007). The Final Plan proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of sulfur oxides (SO_X), directly emitted $PM_{2.5}$, and nitrogen oxides (NO_X) supplemented with VOCs by 2015. The 8-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NOX and VOC reductions to meet the standard by 2024 assuming a bump-up is obtained. Since it will be more difficult to achieve the 8-hour ozone NAAQS compared to the 1-hour NAAQS, the *2007 AQMP* contains substantially more emission reduction measures compared to the *2003 AQMP*.

IMO MARPOL Annex VI

The International Maritime Organization (IMO) MARPOL Annex VI, which came into force in May 2005, set new international NO_X emission limits on Category 3 (>30 liters per cylinder displacement) marine engines installed on new vessels retroactive to the year 2000. For oceangoing vessel main propulsion engines (<130 revolutions-per-minute [rpm] engine speed), the NO_X limits are about 6 percent lower than the average emissions from pre-Annex VI ships used in the *Port of Los Angeles Inventory of Air Emissions 2005* (Starcrest, 2007). For the proposed Project, all NO_X emission calculations for ship main engines conservatively use non-Annex VI emission factors even though many of the ships in the fleet would likely meet the standard.

Emission Standards for Nonroad Diesel Engines

To reduce emissions from off-road diesel equipment, USEPA established a series of increasingly strict emission standards for new off-road diesel engines. Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards are phased in from 2001 to 2006. Tier 3 standards will be phased in from 2006 to 2008. Tier 4 standards, which likely will require add-on emission control equipment to attain them, will be phased in from 2008 to 2015. These standards apply to construction equipment and terminal equipment. Locomotives and marine vessels are exempt (DieselNet, 2005a).

Emission Standards for Marine Diesel Engines

To reduce emissions from Category 1 (at least 50 horsepower [hp] but < 5 liters per cylinder displacement) and Category 2 (5 to 30 liters per cylinder displacement) marine diesel engines, USEPA established emission standards for new engines, referred to as Tier 2 marine engine standards. The Tier 2 standards have been phased in from 2004 to 2007 (year of manufacture), depending on the engine size (USEPA, 1999). For the proposed Project, this rule is assumed to affect harbor craft but not oceangoing vessel auxiliary engines because the latter would likely be manufactured overseas and, therefore, would not be subject to the rule.

Emission Standards for Locomotives

To reduce emissions from switch and line-haul locomotives, USEPA established a series of increasingly strict emission standards for new or remanufactured locomotive engines. Tier 0 standards apply to engines manufactured or remanufactured from 1973 to 2001.

Tier 1 standards apply from 2002 to 2004. Tier 2 standards apply starting in 2005 (DieselNet, 2005b).

Emission Standards for On-Road Trucks

To reduce emissions from on-road, heavy-duty diesel trucks, USEPA established a series of increasingly strict emission standards for new engines, starting in 1988. The USEPA promulgated the final and cleanest standards with the *2007 Heavy-Duty Highway Rule* (USEPA, 2001). The PM emission standard of 0.01 gram per horsepower-hour (g/hp-hr) is required for new vehicles beginning with model year 2007. Also, the NO_X and nonmethane hydrocarbon (NMHC) standards of 0.20 g/hp-hr and 0.14 g/hp-hr, respectively, would be phased in together between 2007 and 2010 on a percent of sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010. Currently, the strictest standards will be phased in starting in 2007 (USEPA, 2001).

Nonroad Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for nonroad diesel fuel, including locomotives and marine vessels (though not for the marine residual fuel used by very large engines on oceangoing vessels). For the proposed Project, this rule affects line-haul locomotives; the California Diesel Fuel Regulations (described below) generally pre-empt this rule for other sources such as yard locomotives, construction equipment, terminal equipment, and harbor craft. Under this rule, the diesel fuel used by line-haul locomotives was limited to 500 ppm starting June 1, 2007; and will be further limited to 15 ppm starting January 1, 2012 (USEPA, 2004b).

Highway Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for on-road diesel fuel to 15 ppm starting June 1, 2006 (USEPA, 2006).

General Conformity Rule

Section 176(c) of the CAA states that a federal agency cannot support an activity unless the agency determines that the activity will conform to the most recent USEPA-approved SIP. This means that projects using federal funds or requiring federal approval must not: (1) cause or contribute to any new violation of a NAAQS; (2) increase the frequency or severity of any existing violation; or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone.

On December 20, 2007, the USEPA proposed revisions to the General Conformity Regulations. The proposed revisions would clarify, streamline, and improve conformity determination and review processes, and provide transition tools for making conformity determinations for new NAAQS standards. The proposed revisions would also allow federal facilities to negotiate a facility-wide emission budget with the applicable air pollution control agencies, and to allow the emissions of one precursor pollutant to be offset by the emissions of another precursor pollutant. These revisions have not yet been promulgated.

Based on the current General Conformity rule and attainment status of the South Coast Air Basin, a federal action would conform to the SIP if its annual emissions remain below 100 tons of CO or $PM_{2.5}$, 70 tons of PM_{10}, or 10 tons of NO_X or VOC. These *de minimis* thresholds apply to both proposed Project construction and proposed Project operations. (For proposed Project operations, the thresholds are compared to the net change in emissions relative to the NEPA baseline.) If the proposed action exceeds one or more of the *de minimis* thresholds, a more rigorous conformity determination is the next step in the conformity evaluation process.

Conformity Statement

The Port of Los Angeles regularly provides SCAG with its Portwide cargo forecasts for development of the AQMP. Cargo projections from Port activities have been included in the Regional Transportation Plan (RTP) of the Metropolitan Planning Organization (MPO) and, thus, were included in the most recent EPA-approved 1997/1999 SIP and the 2003 SIP, should USEPA approve this. These same projections have also been included in the more recent 2007 RTP and SIP, which will also be submitted for USEPA approval. This has been acknowledged by SCAG, which is the MPO of the region.

3.2.3.2 State Regulations and Agreements

California Clean Air Act

The California Clean Air Act of 1988, as amended in 1992, outlines a program to attain the CAAQS by the earliest practical date. Because the CAAQS are more stringent than the NAAQS, attainment of the CAAQS will require more emissions reductions than what would be required to show attainment of the NAAQS. Consequently, the main focus of attainment planning in California has shifted from the federal to state requirements. Similar to the federal system, the state requirements and compliance dates are based upon the severity of the ambient air quality standard violation within a region.

AB 2650

Assembly Bill (AB) 2650 (Lowenthal) was signed into law by Governor Davis and became effective on January 1, 2003. Under AB 2650, shipping terminal operators are required to limit truck-waiting times to no more than 30 minutes at the Ports of Los Angeles, Long Beach, and Oakland, or face fines of $250 per violation. Collected fines are to be used to provide grants to truck drivers to replace and retrofit their vehicles with cleaner engines and pollution control devices. A companion piece of pending legislation (AB 1971) would ensure that the intent of AB 2650 is not circumvented by moving trucks with appointments inside the terminal gates to wait.

Heavy Duty Diesel Truck Idling Regulation Heavy Duty Diesel Truck Idling Regulation

This CARB rule affects heavy-duty diesel trucks in California starting February 1, 2005. The rule requires that heavy-duty trucks shall not idle for longer than 5 minutes at a time. However, truck idling for longer than 5 minutes while queuing is allowed if the queue is located beyond 100 feet from any homes or schools.

1998 South Coast Locomotive Emissions Agreement

In 1998, CARB, Class I freight railroads operating in the South Coast Air Basin (BNSF and Union Pacific Railroad [UPRR]), and USEPA signed the 1998 Memorandum of Understanding (MOU), agreeing to a locomotive fleet average emissions program in the SCAQMD. The 1998 MOU requires that, by 2010, the Class I freight railroad fleet of locomotives in the SCAQMD achieve average emissions equivalent to the NO_X emission standard established by USEPA for Tier 2 locomotives (5.5 grams per brake horsepower-hour). The MOU applies to both line-haul (freight) and switch locomotives operated by the railroads. This emission level is equivalent, on average districtwide, to operating only federal Tier 2 NO_X-compliant locomotives in the SCAQMD (CARB, 2005c). Since this MOU applies to locomotives on an average districtwide basis, it was conservatively neither considered as a Project component nor as a mitigation measure in this study.

2005 CARB/Railroad Statewide Agreement

In 2005, the CARB, Class I freight railroads operating in the South Coast Air Basin (Burlington Northern and Santa Fe [BNSF] and Union Pacific Railroad [UPRR]), and USEPA signed the 2005 MOU, agreeing to several program elements intended to reduce the emission impacts of rail-yard operations on local communities. The 2005 MOU includes a locomotive idling-reduction program, early introduction of lower-sulfur diesel fuel in interstate locomotives, and a visible emission reduction and repair program (CARB, 2005c).

California Diesel Fuel Regulations

With this rule, the CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles. Harbor craft and intrastate locomotives were originally excluded from the rule, but were later included by a 2004 rule amendment (CARB, 2005d). Under this rule, diesel fuel used in motor vehicles except harbor craft and intrastate locomotives has been limited to 500-ppm sulfur since 1993. The sulfur limit was reduced to 15 ppm on September 1, 2006. The phase-in period was from June 1, 2006, to September 1, 2006. (A federal diesel rule similarly limited sulfur content nationwide to 15 ppm by October 15, 2006.) Diesel fuel used in harbor craft in the SCAQMD was limited to 500-ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. Diesel fuel used in intrastate locomotives (switch locomotives) was limited to 15-ppm sulfur starting January 1, 2007.

Measures to Reduce Emissions from Goods Movement Activities

In April 2006, the CARB approved the *Emission Reduction Plan for Ports and Goods Movement in California* (CARB, 2006e). The Goods Movement Plan proposes measures that would reduce emissions from the main sources associated with port cargo-handling activities, including ships, harbor craft, terminal equipment, trucks, and locomotives. This Plan currently is under public review.

In December 2005, CARB approved the Oceangoing Ship Auxiliary Engine Regulation (Title 13, CCR, Section 2299.1), which requires ship auxiliary engines operating in California waters beginning on January 1, 2007 to use marine diesel oil (MDO) with a maximum sulfur content of 0.5 percent or use marine gas oil (MGO). By January 1, 2010, these source activities must meet an MGO sulfur limit of 0.1 percent (CARB 2006f). The rule was challenged and on August 30, 2007 CARB ceased enforcement of the rule pursuant to an injunction ordered by a federal district court. CARB filed an appeal and requested a stay of the injunction pending the appeal. This stay was granted on October 23, 2007, and CARB again began enforcing the rule. However, on February 27, 2008, a federal appeals court ruled that the regulation is preempted by federal law, meaning that CARB would need federal approval of the regulation to enforce it. Therefore, because the Oceangoing Ship Auxiliary Engine Regulation is currently being litigated, the effects of this regulation were not assumed in the unmitigated emission calculations for the Project alternatives.

In December 2006, CARB approved the Regulation for Mobile Cargo-Handling Equipment (CHE) at Ports and Intermodal Rail Yards (Title 13, CCR, Section 2479), which is designed to use best available control technology (BACT) to reduce diesel PM and NO_X emissions from mobile cargo-handling equipment at ports and inter-modal rail yards. Since January 1, 2007, the regulation imposes emission performance standards on new and in-use terminal equipment that vary by equipment type. The regulation would also include recordkeeping and reporting requirements. The effects of this regulation are accounted for in the unmitigated OFFROAD2007 emission factors used in this study.

On December 6, 2007, CARB approved the California Port Regulations for At-Berth Ocean-Going Vessels (Title 13, CCR, Section 2299.3), which would require operators of vessels meeting specified criteria to turn off auxiliary engines for most of their stay in port. For terminals that are providing electrical power from the electrical grid (such as the Alternative Maritime Power [AMP] program established by the Port), the regulation requires ship fleets to reduce NO_X and PM emissions from auxiliary engines while at berth by 50 percent starting January 1, 2014, and by 80 percent starting January 1, 2020. Because this regulation has not yet been approved by the California Office of Administrative Law, the effects of this regulation were not assumed in the unmitigated emission calculations for the Project Alternatives.

Statewide Portable Equipment Registration Program

The Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB, 2005c). Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts. The PERP generally would apply to proposed dredging and barge equipment.

AB 1493 – Vehicular Emissions of Greenhouse Gases

California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from light duty passenger vehicle fleet by 18 percent in 2020 and 27 percent in 2030.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, statewide GHG emission reduction targets as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels. Some literature equates these reductions to 11 percent by 2010 and 25 percent by 2020.

AB 32 – California Global Warming Solutions Act of 2006

The purpose of AB 32 is to reduce statewide GHG emissions to 1990 levels by 2020. This enactment instructs the CARB to adopt regulations that reduce emissions from significant sources of GHGs and establish a mandatory GHG reporting and verification program by January 1, 2008. AB 32 requires the CARB to adopt GHG emission limits and emission reduction measures by January 1, 2011, both of which are to become effective on January 1, 2012. The CARB must also evaluate whether to establish a market-based cap and trade system. AB32 does not identify a significance level of GHG for CEQA/NEPA purposes, nor has the CARB adopted such a significance threshold.

Executive Order S-01-07

Executive Order S-01-07 was enacted by the Governor on January 18, 2007. Essentially, the order mandates the following: 1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) that a Low-Carbon Fuel Standard (LCFS) for transportation fuels be established for California.

SB 1368 GHG Standard for Electrical Generation

Senate Bill 1368 authorizes the California Public Utilities Commission (CPUC), in consultation with the California Energy Commission (CEC) and CARB, to establish GHG emissions standards for baseload generation for investor owned utilities (IOUs). It requires the CEC to adopt a similar standard for local publicly owned or municipal utilities. The CPUC adopted rulemaking implementing the legislation in January 2007. The California Energy Commission is expected to adopt similar regulations in 2008.

California Climate Action Registry

Established by the California Legislature in 2000, the California Climate Action Registry (CCAR) (Registry) is a nonprofit public-private partnership that maintains a voluntary registry for GHG emissions. The purpose of the Registry is to help companies, organizations, and local agencies establish GHG emissions baselines for purposes of complying with future GHG emission reduction requirements. The Port is a voluntary member of the Registry and has made the following commitments:

- Identify sources of GHG emissions including direct emissions from vehicles, onsite combustion, fugitive and process emissions; and indirect emissions from electricity, steam and co-generation
- Calculate GHG emissions using the CCAR General Reporting Protocol (Version 2.2, March 2007).
- Report final GHG emissions estimates on the Registry website.

LAHD has been a member of CCAR since March 29, 2006, and has recently submitted an emissions inventory for LAHD operations and is currently working on an emissions inventory for Port operations (including Port tenants). Organizations that join the CCAR are specifically recognized by AB 32. As a result, the Port is assured that CARB will incorporate emissions-reporting protocols developed by the CCAR into the California new mandatory GHG emissions reporting program to the maximum extent feasible.

3.2.3.3 Local Regulations and Agreements

Through the attainment planning process, the SCAQMD develops the *SCAQMD Rules and Regulations* to regulate sources of air pollution in the South Coast Air Basin. The most pertinent SCAQMD rules to the proposed Project are listed below. With the possible exception of dredging equipment during construction, the emission sources associated with the proposed Project are considered mobile sources. Therefore, the sources are not subject to the SCAQMD rules that apply to stationary sources, such as

Regulation XIII (New Source Review), Rule 1401 (New Source Review of Toxic Air Contaminants), or Rule 431.2 (Sulfur Content of Liquid Fuels).

SCAQMD Rule 402 – Nuisance. This rule prohibits discharge of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any such persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property.

SCAQMD Rule 403 – Fugitive Dust. This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. During proposed Project construction, best available control measures identified in the rule would be required to minimize fugitive dust emissions from proposed earth-moving and grading activities. These measures would include site prewatering and rewatering as necessary to maintain sufficient soil moisture content. Additional requirements apply to construction projects on property with 50 or more acres of disturbed surface area, or for any earth-moving operation with a daily earth-moving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintaining dust control records, and designating a SCAQMD-certified dust control supervisor.

SCAQMD Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities. The purpose of this rule is to limit emissions of asbestos, a toxic air contaminant, from structural demolition/renovation activities. The rule requires people to notify the SCAQMD of proposed demolition/renovation activities and to survey these structures for the presence of asbestos-containing materials (ACMs). The rule also includes notification requirements for any intent to disturb ACM; emission control measures; and ACM removal, handling, and disposal techniques. All proposed structural demolition activities associated with proposed Project construction would need to comply with the requirements of Rule 1403.

POLA/POLB Vessel Speed Reduction Program (VSRP). Under this voluntary program, the Port of Los Angeles has requested that ships coming into the Port reduce their speed to 12 knots or less within 20 nm of the Point Fermin Lighthouse. This reduction of 3 to 10 knots per ship (depending on the ship's cruising speed) can substantially reduce emissions from the main propulsion engines of the ships. The program started in May 2001. The CAAP adopted the VSRP as control measure OGV-1 and it expands the program out to 40 nm from the Point Fermin Lighthouse.

POLA/POLB Switch Locomotive Modernization. Pacific Harbor Line (PHL) has entered into an agreement with the Port of Los Angeles and Port of Long Beach to replace its harbor locomotives with cleaner locomotives either meeting the Tier 2 standards or using alternative fuels. At the Berth 121-131 terminal rail yard, PHL has agreed to replace the existing uncontrolled switch locomotive with a locomotive meeting the Tier 2 locomotive standards described in Section 3.2.3.1. The replacement is scheduled to occur between the 3rd quarter 2006 and the 3rd quarter 2007 (pers. comm., Maun, 2005), per CAAP measure RL-1.

Emulsified Fuels and Oxidation Catalysts. The operator at the Berth 121-131 terminal has agreed to use emulsified fuel and DOCs in all toppicks at the Berth 121-131 rail yard starting in 2005 (pers. comm., Maun, 2005).

3.2.3.4 Los Angeles Harbor Department Clean Air Policy

The Port of Los Angeles 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 AMP, use of emulsified fuel and DOCs in yard equipment, alternative fuel testing, and the VSRP.

In late 2004, the Port developed a plan to reduce air emissions through a number of near-term measures. The measures were primarily focused on decreasing 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 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 still in development. Because the NNI measures represent potential mitigations for the proposed Project, Appendix C contains an analysis of the feasibility of implementing the NNI measures for purposes of reducing Project emissions.

The Port, in conjunction with the Port of Long Beach and with guidance from SCAQMD, CARB, and USEPA, has adopted the CAAP to expand upon existing and develop new emission-reduction strategies. The CAAP was initiated in response to a new mayor and Board of Harbor Commissioners, and the Port began work on the CAAP. The CAAP was released as a draft Plan for public review on June 28, 2006 and was approved by both the Los Angeles and Long Beach Board of Harbor Commissioners on November 20, 2006. The CAAP focuses on reducing emissions with two main goals: (1) reduce Port-related air emissions in the interest of public health and (2) accommodate growth in trade. The Plan includes near-term measures implemented largely through the CEQA/NEPA process, tariffs, and new leases at both Ports.

This EIS/EIR analysis assumes Project compliance with the CAAP. Project mitigation measures applied to reduce air emissions and public health impacts are largely consistent with, and in some cases exceed, the emission-reduction strategies of the CAAP. Project mitigations also would extend beyond the 5-year CAAP time-frame to the end of the lease period in 2045. Table 3.2-26 details how Project mitigation measures compare to measures identified in the CAAP).

3.2.4 Impacts and Mitigation Measures

This section presents a discussion of the potential air quality impacts associated with the construction and operation of the proposed Project and alternatives. Mitigation measures are provided where feasible for impacts found to be significant.

3.2.4.1 Methodology

Air pollutant emissions of VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ were estimated for construction and operation of the proposed Project and alternatives. To determine their significance, the emissions were compared to Significance Criteria AQ-1 and AQ-3 identified in Section 3.2.4.2. The criteria pollutant emission calculations are presented in Appendix E1.

Dispersion modeling of CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions was performed to estimate maximum offsite pollutant concentrations in the air from emission sources attributed to the Berth 97-109 terminal. The predicted ambient concentrations associated with construction and operation of the proposed Project and alternatives were compared to **Significance Criteria AQ-2 and AQ-4,** respectively. The complete dispersion modeling report is presented in Appendix E2.

Dispersion modeling of vehicle traffic also was performed at a worst-case roadway intersection affected by proposed Project-generated truck trips. The maximum predicted CO "hot spot" concentrations near the intersection were compared to **Significance Criterion AQ-5**.

The potential for proposed Project-generated odors at sensitive receptors in the Project vicinity was assessed qualitatively and compared to **Significance Criterion AQ-6**.

A health risk assessment (HRA) of toxic air contaminant emissions associated with construction and operation of the proposed Project and alternatives was conducted in accordance with a Protocol prepared by the Port and reviewed and approved by both CARB and SCAQMD (POLA, 2005c). Maximum predicted health risk values in the communities adjacent to the Berth 97-109 terminal were compared to **Significance Criterion AQ-7**. The HRA analyzed Project emissions and human exposure to the emissions during the 70-year period from 2004 to 2073. The complete Health Risk Assessment Report is presented in Appendix E3. In addition, a second HRA spanning the years 2009 through 2078 was conducted. Because 2009 represents the first year when the Port would be able to impose mitigation measures other than those stipulated by the Settlement Agreement, the 2009 to 2078 HRA was conducted and intended for information purposes only. The 2009 to 2078 HRA assessed mitigated emissions only.

The consistency of the proposed Project and alternatives with the AQMP was addressed in accordance with **Significance Criterion AQ-8**. GHG emissions were addressed in **Significance Criterion AQ-9**.

Finally, mitigation measures were applied to proposed Project activities that would exceed a significance criterion prior to mitigation, and then evaluated as to their effectiveness in reducing proposed Project impacts.

The emission estimates, dispersion modeling, and health risk estimates presented in this document were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available for this study.

The numerical results presented in the tables of this report were rounded, often to the nearest whole number, for presentation purposes. As a result, the sum of tabular data in the tables could differ slightly from the reported totals. For example, if emissions from Source A equal 1.2 pound per day (lb/day), and emissions from Source B equal 1.4 lb/day, the total emissions from both sources would be 2.6 lb/day. However, in a table, the emissions would be rounded to the nearest lb/day, such that Source A would be reported as 1 lb/day, Source B would be reported as 1 lb/day, and the total emissions from both sources would be reported as 3 lb/day. Although the rounded numbers create an apparent discrepancy in the table, the underlying addition is accurate.

Methodology for Determining Construction Emissions

Proposed Project construction activities would involve the use of off-road construction equipment, on-road trucks, tugboats, and general cargo ships. Because these sources would primarily use diesel fuel, they would generate emissions of diesel exhaust in the form of VOC, CO, NO_X SO_X, PM_{10} and $PM_{2.5}$. In addition, off-road construction equipment traveling over unpaved surfaces and performing earthmoving activities such as site clearing or grading would generate fugitive dust emissions in the form of PM_{10} and $PM_{2.5}$. Worker commute trips would generate vehicle exhaust and paved road dust emissions.

The equipment usage and scheduling data needed to calculate emissions for the proposed construction activities were obtained from environmental review documents of previously proposed construction actions within the Port (LAHD, 1997a; USACE and LAHD, 2000); consultation with contractors involved in Phase I of the Berth 100 wharf construction activity (pers. comm., Imparato, 2004); and LAHD staff (pers. comm., Zmuda, 2004).

To estimate peak daily construction emissions for comparison to SCAQMD emission thresholds, emissions were first calculated for the individual construction activities (for example, wharf construction, marine terminal crane delivery, or backlands construction). Peak daily emissions then were determined by summing emissions from overlapping construction activities as indicated in the proposed construction schedule (Table 2-2). The SCAQMD emission thresholds are discussed in Section 3.2.4.2.

The specific approaches to calculating emissions for the various emission sources during construction of the proposed Project are discussed below. Table 3.2-7 includes a synopsis of the regulations and agreements that were assumed as part of the Project in the construction calculations. The construction emission calculations are presented in Appendix E1.

Table 3.2-7. Regulations and Agreements Assumed in the Unmitigated Construction Emissions

Off-Road Construction Equipment	On-Road Trucks	Tugboats	General Cargo Ships	Fugitive Dust
Emission Standards for Nonroad Diesel Engines – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal construction equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting 9/1/06.	**Emission Standards for Onroad Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting 9/1/06. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits starting 2/1/05.	**California Diesel Fuel Regulations** – 500-ppm sulfur starting 1/1/06 and 15-ppm sulfur starting 9/1/06.	No regulations or agreements are assumed to affect unmitigated general cargo ship emissions during Project construction.	**SCAQMD Rule 403 Compliance** – 75 percent reduction in fugitive dust due to watering three times per day.

Note: This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the proposed Project. A description of each regulation or agreement is provided in Section 3.2.3.

Off-Road Construction Equipment

Emissions of VOC, CO, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ from diesel-powered construction equipment were calculated using emission factors derived from the CARB OFFROAD 2007 Emissions Model (CARB, 2007). Using the South Coast Air Basin fleet information, the OFFROAD model was run for each of the construction years of 2002 and 2003 for Phase I, and 2009 through 2012 for Phases II and III. Emission factors were calculated based on each type of equipment, horsepower rating of the equipment, and the corresponding equipment activity levels. The OFFROAD model output shows that, on a per-horsepower-hour basis, emission factors will steadily decline in future years as older equipment is replaced with newer, cleaner equipment that meets the already-adopted future state and federal off-road engine emission standards.

On-Road Trucks

Emissions from on-road, heavy-duty diesel trucks during proposed Project construction were calculated using emission factors generated by the EMFAC2007 on-road mobile source emission factor model for a truck fleet representative of the South Coast Air Basin (CARB, 2007). The EMFAC2007 model output shows that, on a per-mile basis, emission factors will steadily decline in future years as older trucks are replaced with newer, cleaner trucks that meet the required state and federal on-road engine emission standards. In addition, similar to off-road construction equipment, the current sulfur limit of 500 ppm in on-road diesel fuel was reduced to 15 ppm starting September 1, 2006.

Other assumptions regarding on-road trucks during construction include:

- Trucks hauling dredge materials were assumed to travel 90 percent of the trip distance at 25 miles per hour (mph), and 10 percent at 10 mph. All other construction-related trucks were assumed to travel 40 percent of the trip distance at 55 mph, 50 percent at 25 mph, and 10 percent at 10 mph (pers. comm., Crabtree, 2005).
- The average round-trip travel distances for trucks were assumed to be 130 miles for pile deliveries, 15 miles for concrete trucks, 1 mile for disposal of dredge sediments (at the Anchorage Road site near Berth 205), and 40 miles for all other supply trucks (pers. comm., Crabtree, 2003).
- Nonincidental truck idling times were assumed to be 20 minutes for concrete truck trips and 10 minutes for all other truck trips.

Tugboats

During construction, tugboats would be used to haul dredge sediment in barges to Berth 205 for disposal, to transport dike rock in barges from Catalina Island to the Project site for use in the landfill and wharf construction activities, and to assist cargo ships delivering marine terminal cranes to Berths 100 and 102.

Emissions from tugboat main and auxiliary engines were calculated using Entec (Entec, 2002) emission factors for medium- and high-speed diesel marine engines, respectively, as reported by Starcrest (Starcrest, 2007). Although many tugboats at the Port have been repowered with Tier 2 marine engines as part of the ongoing Tugboat Retrofit Project at the Port, the emission calculations conservatively used uncontrolled Entec emission factors for all construction phases.

Prior to 2006, the diesel fuel used in tugboats is assumed to have an average sulfur content of 0.19 percent (1,900 ppm), which is based on a survey of current marine fuel suppliers at the Port. The sulfur content limit was reduced to 500 ppm starting January 1, 2006, and 15 ppm starting September 1, 2006. The fuel sulfur content limits starting in 2006 are required for California harbor craft in accordance with California Diesel Fuel Regulations.

Other assumptions regarding tugboats during construction include:

- During dredging activities, a tugboat was assumed to complete two round trips per day hauling a barge to Berth 205 for sediment disposal. The round-trip distance is 2 nm.
- Barges would transport dike rock from Catalina Island to the Project site for use in the landfill and wharf construction activities. Two tugboats hauling barges with a capacity of 2,000 tons were assumed to deliver rock to the construction sites on a daily basis.
- Two tugboats were assumed for each assist of a general cargo ship during marine terminal crane delivery.

General Cargo Ships

During construction, general cargo ships would be used to deliver marine terminal cranes to Berths 100 and 102. For crane delivery, a ship would arrive at the berth, remain at berth (hoteling) for about 5 working days while the cranes are side-shifted onto the wharf, and then depart (pers. comm., Imparato, 2005).

Emissions from the main engines, auxiliary engines, and boilers on general cargo ships were calculated using Entec and CARB emission factors, as reported in the *Port of Los Angeles Inventory of Air Emissions 2005* (Starcrest, 2007). At low loads, the emission factors for main engines were adjusted higher, on a per kilowatt hour (kWh) basis, using low-load adjustment factors (Starcrest, 2007).

The main engines, auxiliary engines, and boilers on the crane delivery ships conservatively were assumed to use residual fuel with a worst-case sulfur content of 4.5 percent (45,000 ppm), which is the global cap for sulfur content set by the IMO. By comparison, the average residual fuel sulfur content at the Port is 2.7 percent (27,000 ppm) (Starcrest, 2007).

The methodology in the *Port of Los Angeles Inventory of Air Emissions 2005* was used to calculate ship emissions during transit and hoteling (Starcrest, 2007). This methodology uses assumptions regarding engine load factors and associated energy output during each trip segment. During transit, main engine load factors were assumed to follow the propeller law, which states that the engine load factor is proportional to the speed of the ship cubed.

Other assumptions regarding general cargo ships during construction include:

- One ship is capable of transporting up to four cranes. As a result, one ship was required for Phase I of construction. For the proposed Project, two ships would be required for Phase II, and one ship would be required for Phase III of construction.
- Without mitigation, the general cargo ships were assumed not to observe the VSRP.
- During transport, emissions from ships were calculated from the berth to the edge of SCAQMD waters (roughly a 50-mile, one-way trip).

- During hoteling, ships were assumed to turn off the main engines but leave the auxiliary engines and boilers running.

Fugitive Dust

Emissions of fugitive dust (PM_{10}) from earth-moving activities would occur during backlands development. PM_{10} emissions were calculated using emission factors developed in special studies conducted by USEPA (1995). Emissions were reduced by 75 percent from uncontrolled levels to reflect required compliance with SCAQMD Rule 403. According to SCAQMD guidance, watering the site three times per day pursuant to Rule 403 would reduce fugitive dust emissions by 75 percent (SCAQMD, 2005f). The dust-control methods for the proposed Project would be specified in the dust-control plan that must be submitted to the SCAQMD per Rule 403.

Fugitive dust emissions from earth-moving activities are proportional to the surface area of the land being disturbed. Peak daily emissions for backlands development were calculated assuming that 20 percent of the total backlands area would be disturbed at any one time during construction.

Worker Commute Trips

Emissions from worker trips during proposed Project construction were calculated using the land use emissions model URBEMIS 2007, version 9.2.0 (Rimpo and Associates, 2007). URBEMIS 2007 calculated emissions from vehicle exhaust, tire wear, brake wear, and paved road dust using SCAQMD default assumptions for vehicle fleet mix, travel distance, and average travel speeds.

Methodology for Determining Operational Emissions

Operational emission sources include container ships, tugboats, terminal equipment, on-road trucks, trains, and rail yard equipment. Because these sources would use diesel fuel, they would generate emissions of diesel exhaust in the form of VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. In addition, when ships are using AMP, indirect emissions would be created by regional power plants burning fossil fuels to generate the electricity consumed by the hoteling ships. Worker commute trips would generate vehicle exhaust and paved road dust emissions.

Information on proposed operational emission sources was obtained from Port staff, environmental review documents for previous terminal development projects at the Port (LAHD, 1997a and 2002), the proposed Project traffic study conducted as part of this EIS/EIR (Section 3.6), and the *Port of Los Angeles Inventory of Air Emissions 2005* (Starcrest, 2007).

Table 3.2-8 includes a synopsis of the regulations that were assumed in the unmitigated emissions calculations. Current in-place regulations are treated as Project elements rather than mitigation because they represent enforceable rules with or without Project approval. Only current regulations and agreements were assumed as part of the unmitigated Project emissions for the various analysis years.

CAAP measures planned for future implementation at a project level are treated as project mitigation in this study. Likewise, the requirements in the settlement agreement for the proposed Project also are treated as mitigation. Therefore, the unmitigated Project emissions assume no future CAAP measure implementation and no settlement agreement measures.

Table 3.2-8. Regulations and Agreements Assumed as Part of the Unmitigated Project Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains	Rail Yard Equipment
Vessel Speed Reduction Program – 68 percent compliance in 2005, 2015, 2030, and 2045	**California Diesel Fuel Regulations** – 500-ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. **Engine Standards for Marine Diesel Engines** – Tier 2 standards gradually phased in due to normal tugboat fleet turnover.	**Emission Standards for Nonroad Diesel Engines** – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal terminal equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006.	**Emission Standards for Onroad Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **AB 2650** – On-terminal trucks are subject to idling limits. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits.	**Emission Standards for Locomotives** – Tier 0, 1, and 2 standards gradually phased in over all years due to normal locomotive fleet turnover. **2005 CARB/Railroad Statewide Agreement** – Reduced line haul locomotive idling times assumed to take effect starting in 2006. **Switch Locomotive Modernization Agreement** – Tier 2 switch locomotive at the Berth 121-131 Rail yard starting in 2008. This supersedes the Emission Standards for Locomotives (above). Applies only to the Berth 121-131 rail yard switch locomotive. **Nonroad Diesel Fuel Rule** – 500-ppm sulfur starting June 1, 2007 and 15-ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. **California Diesel Fuel Regulations** –15-ppm sulfur starting January 1, 2007. Applies to all switch locomotives.	**Emission Standards for Nonroad Diesel Engines** – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal rail yard equipment fleet turnover. **California Diesel Fuel Regulations**– 15-ppm sulfur starting September 1, 2006. **Emulsified Fuels and Oxidation Catalysts** – This agreement applies to all toppicks at the Berth 121-131 rail yard starting in 2005

Note: This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the proposed Project emissions. A description of each regulation or agreement is provided in Section 3.2.3.

The specific approaches to calculating emissions for the various emission sources during Project operations are discussed below.

The operational emission calculations are presented in Appendix E1.

Container Ships

Emissions from the main engines, auxiliary engines, and boilers on container ships were calculated using Entec and CARB emission factors, as reported in the *Port of Los Angeles Inventory of Air Emissions 2005* (Starcrest, 2007).

To estimate annual or average daily unmitigated emissions, the ship main engines were assumed to use residual fuel with an average sulfur content of 2.7 percent (27,000 ppm). A sulfur content of 2.7 percent represents a worldwide average for residual fuel (Entec, 2002). The Port has completed a study regarding low sulfur fuel availability and has verified that the ships calling at the San Pedro Bays Port are consistent with the worldwide average of 2.7 percent sulfur content (Starcrest, 2005).

Between the fairway and the berth, and at-berth, 71 percent of the ship auxiliary engines and boilers were assumed to use residual fuel with an average sulfur content of 2.7 percent, and 29 percent of the auxiliary engines and boilers were assumed to use marine diesel oil (MDO) with an average sulfur content of 0.5 percent (Starcrest, 2007). Within the fairway (the most distant transit segment from the berth within SCAQMD waters), all ship auxiliary engines were assumed to use residual fuel with an average sulfur content of 2.7 percent. Ship auxiliary boilers were assumed to operate only between the fairway and the berth, and at berth.

Without mitigation, the emission factors and fuels for container ships were assumed to remain unchanged in future years. All ships were conservatively assumed to be noncompliant with IMO MARPOL Annex VI NO_X limits.

The methodology in the *Port of Los Angeles Inventory of Air Emissions 2005* was used to calculate ship emissions during transit and hoteling (Starcrest, 2007). This methodology uses assumptions regarding engine load factors and associated energy output during each trip segment. During transit, main engine load factors were determined using the propeller law, which states that the engine load factor is proportional to the speed of the ship cubed. At low loads, the emission factors for main engines were adjusted higher, on a per kWh basis, using low-load adjustment factors (Starcrest, 2007).

Other assumptions regarding container ships include:

- During transit, emissions from ships were calculated from the berth to the edge of SCAQMD waters (roughly a 50-mile, one-way trip).
- The VSRP compliance rate in 2005 was assumed to be 68 percent without mitigation, which is the actual China Shipping compliance rate for calendar year 2005 (pers. comm., Maggay, 2005). The unmitigated compliance rate for all future analysis years was assumed to remain at the 2005 level of 68 percent.
- During hoteling (without AMP), ships were assumed to turn off the main engines but leave the auxiliary engines and boilers running. With AMP, the auxiliary engines would also be turned off; but the boilers would remain running.
- Hoteling durations were calculated based on future projected Port-average lifts per call, ship work rates, crane productivity, and mean cranes per ship. A 3-hour tie-up and untie time was included in the estimate (JWD, 2002).
- As reported in the *Port of Los Angeles Inventory of Air Emissions 2005*, some arriving container ships are not able to proceed directly to the berth, but instead must wait at a designated anchorage point either inside or outside the breakwater until given clearance to proceed to the berth. An average anchorage time of 4.1 hours was assumed for each arriving ship for all Project analysis years. The anchorage time was derived from actual data for China Shipping ship visits for 2004, 2005, and 2006, provided by Starcrest and the Port (2007). Similar to hoteling, the main engine is assumed to be turned off during anchorage, while the auxiliary engines and boilers are assumed to remain running.
- The assumed sizes of the container ships calling at the Berth 97-109 terminal were based on actual data for year 2005, and a Port-projected fleet mix for years 2015, 2030, and 2045. In 2005, 10 ship visits (19 percent) were in the 3,000-5,000 TEU size category, and 42 ship visits (81 percent) were in the 5,000-6,000 TEU size category. Fleet mix assumptions for the future analysis years are as follows:

Year 2010:	30 percent 3,000-5,000 TEU ship size 60 percent 5,000-6,000 TEU ship size 10 percent 8,000-9,000 TEU ship size
Year 2015:	20 percent 3,000-5,000 TEU ship size 60 percent 5,000-6,000 TEU ship size 20 percent 8,000-9,000 TEU ship size
Years 2030 and 2045:	14 percent 3,000-5,000 TEU ship size 53 percent 5,000-6,000 TEU ship size 25 percent 8,000-9,000 TEU ship size 8 percent 9,000-11,000 TEU ship size

Tugboats

During Project operations, tugboats would be used to assist container ships while maneuvering and docking inside Port breakwater.

Composite emission factors for main and auxiliary engines on assist tugboats were determined based on a year 2005 Port inventory of tugboat engine sizes and model years (Starcrest, 2007). A gradual replacement of older tugboat engines with new engines meeting EPA Tier 2 standards (USEPA, 1999) was assumed based on default marine engine lifetimes developed by CARB (CARB, 2004b).

Prior to 2006, the diesel fuel used in tugboats is assumed to have an average sulfur content of 0.19 percent (1,900 ppm), which is based on a survey of current marine fuel suppliers at the Port. The sulfur content limit was reduced to 500 ppm starting January 1, 2006, and 15 ppm starting September 1, 2006. The fuel sulfur content limits starting in 2006 are required for California harbor craft in accordance with California Diesel Fuel Regulations.

Two tugboats were assumed for each arrival and departure assist of a container ship.

Terminal Equipment

Terminal equipment includes yard tractors, RTGs, toppicks, sidepicks, forklifts, and other miscellaneous equipment. Without mitigation, all of this equipment is assumed to be diesel powered. The marine terminal cranes used to lift containers on and off container ships would be electric and, therefore, would have no direct emissions.

Emissions of VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ from diesel-powered terminal equipment were calculated using emission factors derived from the CARB OFFROAD2007 Emissions Model (CARB, 2007). The OFFROAD model was run using the actual terminal equipment population at the Berth 97-109 terminal in 2005. With each future analysis year, the equipment population was allowed to age in the OFFROAD model until reaching its useful lifetime, at which point the equipment would be assumed to be replaced by new equipment meeting current emission standards. The new replacement equipment would then age in a similar manner. As a result, emission factors for terminal equipment tend to gradually increase with time as equipment ages, followed by a sudden reduction in emission factors upon replacement with new equipment.

Emission factors for SO_X were determined from the fuel consumption rate of the terminal equipment and the sulfur content of the diesel fuel used in the equipment. The sulfur content in diesel fuel was assumed to be 500 ppm prior to September 2006, and 15 ppm starting September 1, 2006. These values represent the maximum allowable sulfur content in diesel fuel sold in California.

To calculate emissions, the predicted terminal equipment usage for each future year was multiplied by the OFFROAD emission factors. The terminal equipment usage for Berths 97-109 in each analysis year, including the 2001 CEQA baseline year, was scaled from the year 2005 usage in proportion to the annual predicted TEU throughput.

Trucks

Emissions from on-road, heavy-duty diesel trucks hauling containers during proposed Project operations were calculated using emission factors generated by the EMFAC2007 on-road mobile source emission factor model (CARB, 2007). Registration information for approximately 7,200 on-road trucks that serviced San Pedro Bay Ports container terminals in the year 2003 was used to develop the truck fleet age distribution used in EMFAC2007 (Starcrest, 2007). To estimate future year emission factors, the age distribution of the baseline truck fleet was increased by the time step between year 2003 and each future Project year to determine the truck fleet age distribution for each Project year. The EMFAC2007 model output shows that, on a per-mile basis, emission factors will steadily decline in future years as older trucks are replaced with newer, cleaner trucks that meet the required state and federal on-road engine emission standards.

Other assumptions regarding on-road trucks during operations include:

- The average one-way truck trip distances from the Berth 97-109 terminal were assumed to be 20 miles to nonrail yard destinations in the South Coast Air Basin, and 82 miles to the edge of the basin (for destinations outside the basin). The average one-way truck trip distance to off-dock rail yards was assumed to be 15 miles in 2005, 30 miles in 2015, and 31 miles in 2030 and 2045. The increasing distance with time reflects the assumption that a greater percentage of trucks will travel to more distant rail yards in the Inland Empire in future years (pers. comm., Yang, 2007).
- In 2001 and 2005, trucks were assumed to travel 10 percent of the trip distance at 10 mph, 50 percent at 25 mph, and 40 percent at 55 mph. In 2010 and 2015, to account for increased traffic congestion, trucks were assumed to travel 10 percent of the trip distance at 10 mph, 60 percent at 25 mph, and 30 percent at 55 mph. In 2030 and 2045, trucks were assumed to travel 10 percent of the trip distance at 10 mph, 70 percent at 25 mph, and 20 percent at 55 mph.
- Truck idling time is assumed to be 20 minutes for on-terminal idling and 30 minutes for off-terminal idling per round trip (Starcrest, 2007).
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated and added to the EMFAC2007 emissions from truck exhaust, tire wear, and brake wear. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways were derived from an emission factor equation published by USEPA (USEPA, 2006). South Coast Air Basin vehicle travel fractions used in the equation were provided by CARB (CARB, 1997).

Trains and Rail Yard Equipment

Emissions associated with hauling containers by rail include yard locomotive emissions during switching activities at the rail yards, line-haul locomotive emissions during transport within the South Coast Air Basin and idling at the rail yards, and emissions from rail yard equipment used to load and unload containers onto the railcars. All of these emission sources would use diesel fuel.

Locomotive future year emission factors were developed as a function of USEPA nationwide locomotive emission standard implementation schedule (USEPA, 1998b). In general, locomotive emission factors decline in future years as older locomotives are gradually replaced with newer locomotives meeting USEPA-tiered emission standards.

The emission factors for the yard locomotive at the Berth 121-131 terminal rail yard were adjusted to account for PHL's commitment to replace the existing yard locomotive with one that meets the Tier 2 standard by 2008 (pers. comm., Maun, 2005).

Idling times for line-haul locomotives at the rail yards also were adjusted in response to the 2005 CARB/Railroad Statewide Agreement. Specifically, assumed idling times during train assembly were reduced from 2.5 hours to 1.5 hours starting in 2006 to account for restrictions on idling and the phase-in of anti-idling devices.

Prior to September 2006, the diesel fuel used in yard locomotives was assumed to have an average sulfur content of 500 ppm since California on-road diesel fuel is currently being used in these locomotives. Starting January 1, 2007, yard locomotives started using diesel fuel with a maximum sulfur content of 15 ppm, in accordance with California Diesel Fuel Regulations. Line-haul locomotives were assumed to use diesel fuel with an average sulfur content of 1,927 ppm before June 2007. Starting June 1, 2007, the USEPA Nonroad Diesel Fuel Rule limited the sulfur content to 500 ppm for line-haul locomotives. Starting January 1, 2012, the Rule will further limit the sulfur content to 15 ppm for line-haul locomotives (USEPA, 2004b).

Emissions from the rail yard equipment, other than locomotives, were calculated using the terminal equipment emission factors derived from the OFFROAD model, as described above for terminal equipment. The rail yard equipment emission calculations also account for the agreement that the terminal operator would use emulsified fuel and DOCs in all toppicks at the Berth 121-131 terminal rail yard, effective 2005.

Other assumptions regarding rail hauling during operations include:

- The average one-way train trip distance is assumed to be 105 miles, which is the average travel distance from the Berth 121-131 rail yard to the edge of the South Coast Air Basin.
- The distribution of containers moving through on-dock rail (Berth 121-131 ICTF), and off-dock rail yards for each proposed Project year was provided by the traffic study (pers. comm., Yang, 2007). For all future analysis years, the container throughput at the on-dock rail yard from the Berth 97-109 and Berth 121-131 terminals was capped at the current physical capacity of the rail yard. The share of throughput assumed to each terminal at the on-dock rail yard was in proportion to total projected TEU throughput at each terminal.
- Each inbound train trip (into the Port of Los Angeles) would transport an average of 150 containers plus empty railcars. Each outbound train trip (to inland locations) would transport an average of 225 containers (POLA, 2007).

AMP Power Generation

Regional emissions associated with electricity generation for AMP as a mitigation measure were calculated using emission factors provided by the SCAQMD in the *CEQA Air Quality Handbook* (SCAQMD, 1993). Although the emissions could be generated by power plants inside and outside the South Coast Air Basin, the emissions were conservatively assumed in this study to be produced entirely within the South Coast Air Basin.

The amount of electricity required by hoteling container ships was estimated using average auxiliary engine sizes and load factors provided by Starcrest (Starcrest, 2007), and average hoteling times calculated as described above.

Worker Commute Trips

Emissions from worker trips during proposed Project operation were calculated using the land use emissions model URBEMIS 2007, version 9.2.0 (Rimpo and Associates, 2007.). URBEMIS 2007 calculated emissions from vehicle exhaust, tire wear, brake wear, and paved road dust using SCAQMD default assumptions for vehicle fleet mix, travel distance, and average travel speeds.

Greenhouse Gases

Greenhouse gas emissions associated with the proposed Project and alternatives were calculated based on methodologies provided in the California Climate Action Registry *General Reporting Protocol, Version 2.2* (CCAR, 2007). The General Reporting Protocol is the guidance document that the Port and other CCAR members must use to prepare annual portwide GHG inventories for the CCAR. Therefore, for consistency, the General Reporting Protocol also was used in this study. However, to adapt the Protocol for NEPA/CEQA purposes, a modification to the Protocol operational and geographical boundaries was necessary.

The Project-related construction sources for which GHG emissions were calculated include:

- Off-road diesel construction equipment
- On-road trucks
- Marine cargo vessels used to deliver equipment to the site
- Worker commute vehicles

The Project-related operational emission sources for which GHG emissions were calculated include:

- Ships
- Tugboats
- Terminal equipment
- Rail yard equipment
- On-road trucks
- Trains
- Fugitive HFC emissions from refrigerated containers (reefers)
- AMP electricity consumption (for the mitigated Project)
- On-terminal electricity consumption
- Worker commute vehicles

The adaptation of the General Reporting Protocol methodologies to these Project-specific emission sources is described in Appendix E1.

GHG Operational and Geographical Boundaries

Under CCAR General Reporting Protocol, emissions associated with Project construction and operations would be divided into three categories:

- Scope 1: Direct emissions from sources owned or operated by the Port
- Scope 2: Indirect emissions from purchased and consumed electricity
- Scope 3: Indirect emissions from sources not owned or operated by the Port

Examples of Scope 1 sources for LAHD or the proposed Project tenant would be cargo-handling equipment, LAHD vehicles, Port-based yard locomotives (switching locomotives), and Port-based tugboats. Scope 2 emissions would be indirect GHG emissions from electricity consumption on the terminal. Because the proposed Project tenant and/or Port generally do not own ships, main line locomotives, trucks, or construction equipment, these mobile sources would be considered Scope 3 emissions.

CCAR does not require Scope 3 emissions to be reported because they are considered to belong to another reporting entity (i.e., whoever owns, leases, or operates the sources), and that entity would report these emissions as Scope 1 emissions in its own inventory. Virtually all trucks, line-haul locomotives, ships, tugboats, and construction equipment fall under this category. As a result, when used for NEPA and CEQA purposes, the CCAR definition of operational boundaries would omit a large portion of the GHG emission sources associated with the proposed Project. Therefore, the operational and geographical boundaries were determined differently from the General Reporting Protocol to make the GHG analysis more consistent with CEQA and to avoid the omission of a significant number of mobile sources.

For the purposes of this NEPA/CEQA document, GHG emissions were calculated for all Project-related sources (Scopes 1, 2, and 3). Because CCAR does not require reporting of Scope 3 emissions, CCAR has not developed a protocol for determining the operational or geographical boundaries for some Scope 3 emissions sources, such as ships. Therefore, for those sources that travel out of California (trucks, trains, and ships), GHG emissions were based on the following routes:

- For on-road trucks, the average travel distance between the Port and the California border was estimated to be 250 miles. This distance is consistent with the distance used in the *Port of Los Angeles Inventory of Air Emissions 2005*. For those trucks with destinations within California (local trips or trucks destined for off-dock rail yards), GHG emissions were based on the entire route.

- For trains, the average travel distance between the on-dock rail yard at Berths 121-131 and the eastern border of California was estimated to be 250 miles.

- For cargo ships, ocean transit along a 170-nautical mile shipping route between the Port and the California 3-mile jurisdictional boundary west of Point Conception. The analysis assumed that all Project ships would follow this "northern" route. The northern route represents the longest distance that container ships would travel to and from the Port while in "State Waters."

In the case of electricity consumption, all GHG emissions were included regardless of whether they are generated by in-state or out-of-state power plants.

This approach is consistent with the CCAR goal of reporting all GHG emissions within the State of California (CCAR, 2007). This document acknowledges that

GHG emissions extend beyond state borders. However, origin and destination data for out-of-state emissions over the life of the project do not exist and would be speculative on a project-specific level. Emissions outside state boundaries are discussed in the Cumulative Impacts, Chapter 4.

The Port is a landlord Port, and the proposed Project involves granting a lease to China Shipping. Port leases do not regulate demand-and-supply patterns or dictate business partnerships in leases. For example, while most vessel calls will originate from Asia, the Port does not know or regulate what percentage of ships originate from individual Asian ports. While the shipping company does contract with the rail and trucking companies to move cargo in and out of the terminal on the land side, a larger percentage of containers are moved under contracts with freight forwarders or directly by the retailer. Some goods are sold to a retailer while already on board the vessel, making ultimate tracking difficult. Also, the Port does not track where rail or truck cargo originates or is dropped off outside State boundaries. Through market studies, the Port has estimates of how much cargo overall leaves the state but does not track ultimate destinations, and these data are considered proprietary by the mainline rail and trucking companies.

This methodology is consistent with other types of air quality analyses that address emissions within an area over which the regulating agency has control. For example, while the document discloses that criteria pollutants are emitted from ships, trucks, and railroads outside state boundaries and that these pollutants contribute to worldwide pollution rates, the scope of analysis is limited to the South Coast Air Basin to be consistent with thresholds established by the SCAQMD.

CEQA Impact Determination

Section 15125 of the CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the vicinity of the project that exists at the time of the NOP. These environmental conditions would normally constitute the baseline physical conditions by which the CEQA lead agency determines whether an impact is significant. For purposes of this Recirculated Draft EIS/EIR, the CEQA baseline for determining the significance of potential proposed Project impacts is the condition prior to March 28, 2001, pursuant to the Amended Stipulated Judgment described in Chapter 1, Section 1.4.2. The CEQA baseline for this Project includes the backlands and 45,135 TEUs/year in the period April 2000 through March 2001. Berths 97-109 had no ship calls prior to March 28, 2001, because China Shipping ships berthed at the Berth 121-131 terminal. The 45,135 TEUs were loaded and unloaded at the Yang Ming Terminal and transported to the China Shipping Terminal. As discussed in Section 3.2.2.3, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations in the baseline year. The terminal equipment was used to move containers back and forth between the two terminals, and to stack and unstack the containers on the Berth 97-109 backlands. Other emission sources – including ships, tugboats, trucks, locomotives, and employee trips – were associated with Berths 121-131 only and, therefore, were not included in the baseline emissions.

The CEQA baseline represents actual emissions at a fixed point in time and differs from the No Project Alternative (discussed in Section 2.6) in that the No Project Alternative addresses what is likely to happen at the site over time, starting from the existing conditions. The No Project Alternative allows for growth at the Project site that would occur without additional approvals.

NEPA Impact Determination

For purposes of this Recirculated Draft EIS/EIR, the evaluation of significance under NEPA is defined by comparing the proposed Project or other alternative to the NEPA baseline. The NEPA baseline condition for determining significance of impacts includes the full range of construction and operational activities the applicant could implement and is likely to implement absent permits from the USACE. The NEPA baseline begins in the year prior to 2001 but is not fixed in time. The NEPA baseline includes construction and operation of backlands container operations on up to 117 acres but does not include wharves, dredging, and improvements that would require federal permits. The NEPA baseline assumes upland development, including an additional 106 acres of container backlands over the March 2001 baseline conditions of 11 acres of backlands. The in-water elements constructed under Phase I are not included in the NEPA baseline so that Phase I activities of the proposed Project and alternatives can be properly evaluated under NEPA. In addition, the NEPA baseline assumes a highest reasonably foreseeable container throughput of 632,500 TEUs. No annual ships calls are included in the NEPA Baseline and the four existing A-frame cranes and bridge built as part of Phase I are not included in the baseline.

Unlike the CEQA baseline, which is defined by conditions at a point in time, the NEPA baseline is not bound by statute to a “flat” or “no growth” scenario. Therefore, the USACE may project increases in operations over the life of a project to properly describe the NEPA baseline condition. Normally, any ultimate permit decision would focus on direct impacts of the proposed Project to the aquatic environment, as well as indirect and cumulative impacts in the uplands determined to be within the scope of federal control and responsibility. Significance of the proposed Project or alternative is defined by comparing the proposed Project or alternative to the NEPA baseline (i.e., the increment). The NEPA baseline conditions are described in Section 2.1.

The NEPA baseline differs from Alternative 1 (No Project), where the Port would take no further action to construct and develop additional backlands (other than the 72 acres that are currently developed). Under the No Project Alternative, no construction impacts would occur other than removal of an existing bridge and four A-frame cranes built as part of Phase 1. However, forecasted increases in cargo throughput would still occur as greater operational efficiencies are made.

The NEPA baseline also differs from Alternative 2 (No Federal Action) in its Phase I construction activities. Whereas Alternative 2 includes construction of all Phase I elements and subsequent removal of four A-frame cranes, the NEPA baseline includes only the backlands construction elements of Phase I, with no bridge construction and no crane installation and subsequent removal. However, the operational container throughput assumptions for the NEPA baseline and Alternative 2 are identical.

Table 3.2-9 presents the maximum daily criteria pollutant emissions associated with NEPA baseline construction. Phase I construction emissions were unmitigated; Phase II emissions assume implementation of Mitigation Measures AQ-3 through AQ-8, as described in Section 3.2.4.3. The emissions shown in italics represent the construction activities that combine to produce the maximum daily emissions for each construction phase. For example, in Phase II, three of the four construction activities would combine to produce maximum daily emissions: construction of

17 acres of the 45-acre backlands, construction of 10 acres of the 45-acre backlands, and Worker Trips. The other construction activity would not be active during this time.

Table 3.2-9. Peak Daily Emissions Associated with Berth 97-109 Terminal Construction Activities – NEPA Baseline

Emission Source	Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Phase I						
Berth 100 75-Acre Backlands Development	*29*	*102*	*226*	*1.4*	*205*	*51*
Worker Trips	*20*	*264*	*34*	*0.3*	*20*	*2*
Maximum Daily Emissions – Phase I	**49**	**365**	**260**	**1.7**	**225**	**53**
Phase II						
Construct 18 of 45-acre Backlands	11	51	113	0.15	22	6
Construct 17 of 45-acre Backlands	*11*	*50*	*111*	*0.15*	*21*	*6*
Construct 10 of 45-acre Backlands	*11*	*50*	*111*	*0.15*	*13*	*5*
Worker Trips	*2*	*27*	*4*	*0.02*	*5*	*1*
Maximum Daily Emissions – Phase II	**24**	**127**	**226**	**0.3**	**39**	**12**

Notes:

a) Phase II emissions for the NEPA Baseline assume implementation of Mitigation Measures AQ-3 through AQ-8, as described in Section 3.2.4.3.

b) Only the emissions shown in *italics* are included in the maximum daily emissions for each phase. All other emissions would occur at other times and, therefore, would not contribute to the maximum daily emissions.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The average daily and peak daily operational emissions associated with the NEPA baseline are presented in Tables 3.2-10 and 3.2-11, respectively. The operational emissions include, as project elements, the following project-specific emission control measures implemented by the Port and China Shipping pursuant to the Port obligations under the Amended Stipulated Judgment:

- All yard tractors operated at the Berth 97-109 terminal shall run on alternative fuel (assumed to be LPG) beginning September 30, 2004.
- All diesel-powered toppicks and sidepicks operated at Berth 97-109 terminal shall run on emulsified diesel fuel plus a DOC beginning September 30, 2004.

The operational emissions for the NEPA baseline also assume implementation of CAAP Measure CHE-1, plus additional controls for toppicks and yard tractors, as described here:

- Beginning in January 1, 2015, all yard tractors operated at the Berth 97-109 terminal shall be the cleanest available NO_X alternative-fueled engine meeting 0.015 g/hp-hr for PM.
- Beginning January 1, 2009, all toppicks shall have the cleanest available NO_X alternative fueled engines meeting 0.015 g/hp-hr for PM.
- Beginning in January 1, 2009, all terminal equipment purchases other than yard tractors and toppicks shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 g/hp-hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines

available that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest verified diesel emission control system (VDECS).

- By the end of 2012, all terminal equipment less than 750 hp other than yard tractors and toppicks shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards.
- By the end of 2014, all terminal equipment other than yard tractors and toppicks shall meet USEPA Tier 4 non-road engine standards.

Table 3.2-10. Average Daily Operational Emissions – NEPA Baseline

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Terminal Equipment	183	2,701	1,074	4	20	19
Total – Project Year 2005	**183**	**2,701**	**1,074**	**4**	**20**	**19**
Project Year 2010						
Terminal Equipment	324	5,969	1,229	0	21	20
Total – Project Year 2010	**324**	**5,969**	**1,229**	**0**	**21**	**20**
Project Year 2015						
Terminal Equipment	7	852	72	0	3	3
Total – Project Year 2015	**7**	**852**	**72**	**0**	**3**	**3**
Project Year 2030						
Terminal Equipment	8	889	76	0	3	3
Total – Project Year 2030	**8**	**889**	**76**	**0**	**3**	**3**
Project Year 2045						
Terminal Equipment	8	868	75	0	3	3
Total – Project Year 2045	**8**	**868**	**75**	**0**	**3**	**3**

Notes:

a) NEPA baseline emissions include the terminal equipment emission control measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

b) Emissions represent annual emissions divided by 365 days per year of operation.

c) Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations for the NEPA baseline.

d) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The average daily emissions in Table 3.2-10 represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day-to-day depending on container movement.

The peak daily emissions in Table 3.2-11 are compared to future Project peak daily emissions to determine NEPA significance for the proposed Project and alternatives. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the terminal. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently and are based upon a lesser known and, therefore, more theoretical set of conservative assumptions.

Table 3.2-11. Peak Daily Operational Emissions – NEPA Baseline

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Terminal Equipment	492	7,268	2,890	11	53	50
Total – Project Year 2005	**492**	**7,268**	**2,890**	**11**	**53**	**50**
Project Year 2010						
Terminal Equipment	870	16,060	3,306	1	56	54
Total – Project Year 2010	**870**	**16,060**	**3,306**	**1**	**56**	**54**
Project Year 2015						
Terminal Equipment	20	2,291	193	1	7	7
Total – Project Year 2015	**20**	**2,291**	**193**	**1**	**7**	**7**
Project Year 2030						
Terminal Equipment	22	2,393	205	1	8	8
Total – Project Year 2030	**22**	**2,393**	**205**	**1**	**8**	**8**
Project Year 2045						
Terminal Equipment	22	2,336	203	1	7	7
Total – Project Year 2045	**22**	**2,336**	**203**	**1**	**7**	**7**

Notes:

a) NEPA baseline emissions include the terminal equipment emission control measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

b) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

c) Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations for the NEPA baseline.

d) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The peak daily emissions for the NEPA baseline operations assume terminal equipment activity equivalent to 2.7 times the average level of activity. As described in Section 3.2.4.3, this peaking factor reflects the maximum theoretical container movement rates on and off the Berth 97-109 terminal. The container movement rates are tied to the peak ship loading and unloading rates, peak on-dock train loading and unloading rates, and peak day container truck visits. However, because the Berth 97-109 terminal would have no *directly* associated wharf, gate, or on-dock rail throughput under NEPA baseline conditions, it was necessary to derive a peaking factor from activity level assumptions for the proposed Project. The peaking factor of 2.7 represents the average peaking factor from all proposed Project analysis years. This factor was assumed to be representative of peak day NEPA baseline conditions.

Tables 3.2-12 and 3.2-13 present estimates of the GHG emissions generated within California borders from construction and operation, respectively, of the NEPA baseline. The operational emission sources for which baseline GHG emissions were calculated include terminal equipment and on-terminal electricity usage. The GHG emission calculation methodology is described in Appendix E1.

Table 3.2-12. GHG Construction Emissions - NEPA Baseline

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Berth 100 72-Acre Backlands Development	619	0.10	0.00	623
Worker Trips	1,025	0.30	0.14	1,073
Phase II				
Construct 18 of 45-acre Backlands	253	0.00	0.00	255
Construct 17 of 45-acre Backlands	238	0.00	0.00	239
Construct 10 of 45-acre Backlands	141	0.00	0.00	142
Worker Trips	833	0.20	0.10	880
NEPA Baseline Total	**3,110**	**0.65**	**0.28**	**3,211**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

Table 3.2-13. Annual Operational GHG Emissions – NEPA Baseline

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Terminal Equipment	22,420	21	0	0	0	0	22,959
On-Terminal Electricity Usage	1,706	0	0	0	0	0	1,708
Total For Project Year 2005	**24,126**	**21**	**0**	**0**	**0**	**0**	**24,668**
Project Year 2015							
Terminal Equipment	25,587	1	0	0	0	0	25,618
On-Terminal Electricity Usage	2,673	0	0	0	0	0	2,677
Total For Project Year 2015	**28,259**	**1**	**0**	**0**	**0**	**0**	**28,295**
Project Year 2030							
Terminal Equipment	25,615	1	0	0	0	0	25,647
On-Terminal Electricity Usage	2,676	0	0	0	0	0	2,680
Total Project Year 2030	**28,291**	**1**	**0**	**0**	**0**	**0**	**28,327**

Table 3.2-13. Annual Operational GHG Emissions – NEPA Baseline

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2045							
Terminal Equipment	25,615	1	0	0	0	0	25,647
On-Terminal Electricity Usage	2,676	0	0	0	0	0	2,680
Total Project Year 2045	**28,291**	**1**	**0**	**0**	**0**	**0**	**28,327**

Notes:

a) 1 metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

3.2.4.2 Significance Criteria

The following thresholds were used in this study to determine the significance of the air quality impacts of the proposed Project and alternatives both from a CEQA and NEPA perspective. They were based on the standards established by the City of Los Angeles in the *City of Los Angeles CEQA Thresholds Guid*e (City of Los Angeles, 2006).

Construction Thresholds

The *City of Los Angeles CEQA Thresholds Guid*e references the SCAQMD *CEQA Air Quality Handbook* (SCAQMD, 1993) and USEPA *AP-42* for calculating and determining the significance of construction emissions. Each lead city department has the responsibility to determine the appropriate standards. Proposed Project-related factors to be used in a case-by-case evaluation of significance include the following:

- Combustion emissions from construction equipment:
  - Type, number of pieces, and usage for each type of construction equipment
  - Estimated fuel usage and type of fuel (diesel, gasoline, natural gas) for each type of equipment
  - Emission factors for each type of equipment
- Fugitive Dust
  - Grading, excavation, and hauling
    - Amount of soil to be disturbed onsite or moved offsite
    - Emission factors for disturbed soil
    - Duration of grading, excavation, and hauling activities
    - Type and number of pieces of equipment to be used
- Other mobile source emissions
  - Number and average length of construction worker trips to the proposed Project site, per day
  - Duration of construction activities

For the purposes of this study, the air quality thresholds of significance for construction activities are based on emissions and concentration thresholds established by the

SCAQMD (2005b). Construction-related air emissions would be considered significant if:

AQ-1: The Project would result in construction-related emissions that exceed any of the SCAQMD thresholds of significance in Table 3.2-14.

Table 3.2-14. SCAQMD Thresholds for Construction Emissions

Air Pollutant	Emission Threshold (pounds/day)
Volatile organic compounds (VOC)	75
Carbon monoxide (CO)	550
Nitrogen oxides (NO_X)	100
Sulfur oxides (SO_X)	150
Particulates (PM_{10})	150
Particulates ($PM_{2.5}$)	55

Source: SCAQMD, 2007

AQ-2: Project construction would result in offsite ambient air pollutant concentrations that exceed the SCAQMD thresholds of significance in Table 3.2-15.[3] However, to evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the revised and more stringent 1-hour California ambient air quality standard of 338 μg/m^3.

Table 3.2-15. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Project Construction

Air Pollutant	Ambient Concentration Threshold
Nitrogen Dioxide (NO_2)	
1-hour average	0.18 ppm (338 μg/m^3)
Particulates (PM_{10} or $PM_{2.5}$)	
24-hour average	10.4 μg/m^3
Carbon Monoxide (CO)	
1-hour average	20 ppm (23,000 μg/m^3)
8-hour average	9.0 ppm (10,000 μg/m^3)

Notes:

a) The NO_2 and CO thresholds are absolute thresholds; the maximum predicted impact from construction activities is added to the background concentration for the Project vicinity and compared to the threshold.

b) The PM_{10} and $PM_{2.5}$ threshold is an incremental threshold; the maximum predicted impact from construction activities (without adding the background concentration) is compared to the threshold.

c) The SCAQMD has also established a threshold for sulfates, but is currently not requiring a quantitative comparison to these thresholds (pers. comm., Koizumi, 2005).

d) To evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the more stringent revised 1-hour California ambient air quality standard of 338 μg/m^3.

Source: SCAQMD, 2007.

[3] These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. Although the thresholds represent the levels at which the SCAQMD considers the impacts to be significant, the thresholds are not necessarily the same as the NAAQS or CAAQS.

Operation Thresholds

The *City of Los Angeles CEQA Thresholds Guide* provides specific significance thresholds for operational air quality impacts that also are based on SCAQMD standards. For the purposes of this study, a project would create a significant impact if it would result in one or more of the following:

AQ-3: Operational emissions that would exceed 10 tons per year of VOCs or any of the SCAQMD thresholds of significance in Table 3.2-16. For determining CEQA significance, these thresholds are compared to the net change in Project emissions relative to CEQA baseline (2001) conditions. For determining NEPA significance, these thresholds are compared to the net change in Project emissions relative to NEPA baseline emissions.

Table 3.2-16. SCAQMD Thresholds for Operational Emissions

Air Pollutant	Emission Threshold (pounds/day)
Volatile organic compounds (VOC)	55
Carbon monoxide (CO)	550
Nitrogen oxides (NO_X)	55
Sulfur oxides (SO_X)	150
Particulates (PM_{10})	150
Particulates ($PM_{2.5}$)	55

Source: SCAQMD, 2007; City of Los Angeles, 2006

AQ-4: Project operations would result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance in Table 3.2-17.[4] However, to evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the more stringent revised 1-hour and annual California ambient air quality standards of 338 and 56 $\mu g/m^3$, respectively.

AQ-5: Project-generated on-road traffic would result in either of the following conditions at an intersection or roadway within 0.25 mile of a sensitive receptor.

- The proposed Project causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 ppm, respectively.
- The incremental increase due to the Project is equal to or greater than 1.0 ppm for the California 1-hour CO standard, or 0.45 ppm for the 8-hour CO standard.

AQ-6: The Project would create an objectionable odor at the nearest sensitive receptor.

[4] These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. Although the thresholds represent the levels at which the SCAQMD considers the impacts to be significant, the thresholds are not necessarily the same as the NAAQS or CAAQS.

Table 3.2-17. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Project Operations

Air Pollutant	Ambient Concentration Threshold
Nitrogen Dioxide (NO_2)	
1-hour average	0.18 ppm (338 μg/m^3)
annual average	0.03 ppm (56 μg/m^3)
Particulates (PM_{10} or $PM_{2.5}$)	
24-hour average	2.5 μg/m^3
Carbon Monoxide (CO)	
1-hour average	20 ppm (23,000 μg/m^3)
8-hour average	9.0 ppm (10,000 μg/m^3)

Notes:

a) The NO_2 and CO thresholds are absolute thresholds; the maximum predicted impact from proposed Project operations is added to the background concentration for the Project vicinity and compared to the threshold.

b) The PM_{10} threshold is an incremental threshold. For CEQA significance, the maximum increase in concentration relative to the CEQA baseline is compared to the threshold. For NEPA significance, the maximum increase in concentration relative to the NEPA baseline is compared to the threshold.

c) The SCAQMD has also established thresholds for sulfates and annual PM_{10}, but is currently not requiring a quantitative comparison to these thresholds (pers. comm., Koizumi, 2005).

d) To evaluate Project impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the more stringent revised 1-hour and annual California ambient air quality standards of 338 and 56 μg/m^3, respectively.

Source: SCAQMD, 2007.

AQ-7: The Project would expose receptors to significant levels of toxic air contaminants. The determination of significance shall be made as follows:

- Maximum Incremental Cancer Risk for Residential Receptors $\geq$ 10 in 1 million
- Noncancer Hazard Index $\geq$ 1.0 (project increment) or $\geq$ 3.0 (facilitywide)

AQ-8: The Project would conflict with or obstruct implementation of an applicable AQMP.

AQ-9 The Project would produce GHG emissions that exceed CEQA thresholds.

CEQA Threshold. To date, there is little guidance and no local, regional, state, or federal regulations to establish a threshold of significance to determine the Project-specific impacts of GHG emissions on global warming. In addition, the City of Los Angeles has not established such a threshold. Therefore, the Port of Los Angeles, for purposes of this Project only, is utilizing the following as its CEQA threshold of significance:

- The proposed Project would result in a significant CEQA impact if CO_2e emissions exceed CEQA baseline emissions.

In absence of further guidance, this threshold is thought to be the most conservative because any increase over baseline is designated as significant.

NEPA Impacts. The USACE has established the following position under NEPA:

> *There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, the USACE will not utilize the Port of Los Angeles' proposed AQ-9 CEQA standard, propose a new GHG standard, or make a NEPA impact determination for GHG emissions anticipated to result from the proposed Project or any of the alternatives. Rather, in compliance with the NEPA implementing regulations, the anticipated emissions relative to the NEPA baseline will be disclosed for the proposed Project and each alternative without expressing a judgment as to their significance.*

3.2.4.3 Proposed Project Impacts and Mitigation

Proposed Project – Impact AQ-1: The proposed Project would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Table 3.2-18 presents the maximum daily criteria pollutant emissions associated with construction of the proposed Project, before mitigation. Maximum emissions for each construction phase were determined by totaling the daily emissions from those construction activities that overlap in the proposed construction schedule (Table 2-2).

Table 3.2-18. Peak Daily Emissions Associated with Berth 97-109 Terminal Construction Activities – Proposed Project Without Mitigation

Emission Source	Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Phase I						
Construction of a 1,000-foot Wharf at Berth 100	*32*	*100*	*506*	*5.2*	*27*	*25*
Construction of a 200-foot North Extension of Wharf at Berth 100 [b]	42	139	502	5.2	27	25
Crane Delivery and Installation [e]	*48*	*128*	*1,316*	*1,453*	*154*	*124*
Berth 100 75-Acre Backlands Development	*29*	*102*	*226*	*1.4*	*205*	*51*
Construction of Bridge 1	8.3	39	69	0.42	3.4	3.1
Berth 121 Gate Modifications	3.3	9.0	21	0.14	1.2	1.1
Worker Trips	*20*	*264*	*34*	*0.26*	*20*	*2*
Peak Daily Phase I – CEQA Impact [i]	**129**	**594**	**2,082**	**1,460**	**407**	**202**
Peak Daily Phase I – NEPA Impact [i]	**80**	**229**	**1,822**	**1,458**	**182**	**149**
Thresholds	75	550	100	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Phase II						
Construct Berth 102	*15*	*57*	*149*	*0.15*	*5.8*	*5.2*
Construct Berth 100-109 Buildings	*7*	*25*	*56*	*0.06*	*2.9*	*2.7*

Table 3.2-18. Peak Daily Emissions Associated with Berth 97-109 Terminal Construction Activities – Proposed Project Without Mitigation

Emission Source	Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construct 18 of 45-acre Backlands	*18*	*62*	*147*	*0.15*	*55*	*16*
Construct Bridge 2	6	22	51	0.05	2.2	1.9
Construct 17 of 45-acre Backland	17	58	137	0.15	52	15
Construct 10 of 45-acre Backlands (Behind Rear Berth 102)	17	58	137	0.15	33	11
Crane Delivery and Installation	*46*	*117*	*1,302*	*1,452*	*154*	*123*
Worker Trips	*2.15*	*27*	*3.6*	*0.020*	*4.6*	*0.9*
Peak Daily – Phase II	**88**	**287**	**1,657**	**1,453**	**222**	**148**
Phase III						
South Extension of Berth 100	*21*	*63*	*442*	*0.27*	*19*	*18*
Construct 25-acre Backlands (Behind Berth 100)	*16*	*55*	*127*	*0.15*	*73*	*19*
Crane Delivery and Installation	*46*	*116*	*1,300*	*1,452*	*154*	*123*
Worker Trips	*2.0*	*25*	*3.3*	*0.02*	*4.6*	*0.90*
Peak Daily Emissions– Phase III	**85**	**259**	**1,872**	**1,453**	**250**	**161**
Peak Daily – Phases II and III Combined – CEQA Impact [c,i]	**88**	**287**	**1,872**	**1,453**	**250**	**161**
Peak Daily – Phases II and III Combined – NEPA Impact [c,i]	**64**	**161**	**1,646**	**1,453**	**212**	**150**
Thresholds	75	550	100	150	150	50
CEQA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Only the emissions shown in italics are included in the maximum daily emissions for each phase. All other emissions would occur at other times and, therefore, would not contribute to the maximum daily emissions.

b) CO emissions for a 200-foot wharf extension are higher than for a 1,000-foot wharf extension because the 200-foot wharf extension includes dredge and dike filling. The 1,000-foot extension mainly is rebuilding an existing wharf.

c) Maximum daily emissions of VOC and CO from Phases II and III combined represent the sum of the emissions from the following activities assumed to occur on the same day: Construction of Berth 102 (Phase II), Construction of Berth 100-109 Buildings (Phase II), Construct 18 of 45-Acre Backlands Improvements at Berth 100 (Phase II), Crane Delivery and Installation (Phase II), and Worker Trips (Phase II).

d) Maximum daily emissions of NO_X, PM_{10}, and $PM_{2.5}$ from Phases II and III combined represent the sum of the emissions from the following activities: South Extension of Berth 100 (Phase III), Construct 25 acre Backlands behind Berth 100 (Phase III), Crane Delivery and Installation (Phase III), and Worker Trips (Phase III).

e) Emissions of PM_{10} and $PM_{2.5}$ assume that fugitive dust is controlled in accordance with SCAQMD Rule 403 by watering disturbed areas 3 times per day.

f) One general cargo ship delivered four shoreside cranes in Phase I; two general cargo ships would deliver five cranes in Phase II, and one general cargo ship would deliver one crane in Phase III. Without mitigation, the crane delivery ships were assumed not to observe the VSRP.

g) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

h) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

i) The CEQA Impact equals total Project construction emissions minus CEQA baseline construction emissions (which are zero). The NEPA impact equals total Project construction emissions minus NEPA baseline construction emissions as reported in Table 3.2-9.

In the case where more than one possible combination of activities would occur during the course of a construction phase, total daily emissions were calculated for all possible combinations, and the combination producing the greatest emissions was reported in Table 3.2-18. The emissions shown in italics represent the construction activities that combine to produce the maximum daily emissions for each construction phase. For example, in Phase II, five of the eight construction activities would combine to produce maximum daily emissions: Construction of Berth 102, construction of Berth 100-109 buildings, construct 18 of 45-acre backlands improvements at Berth 100, crane delivery and installation, and worker trips (Phase II). The other three construction activities would not be active during this time.

In addition, because Phases II and III overlap each other in the construction schedule, maximum emissions for combined Phases II and III were also determined in the same manner. By contrast, Phase I, which was completed in 2003, does not overlap any other construction phase and, therefore, was evaluated separately.

As shown in Table 3.2-18, the unmitigated peak daily construction emissions during Phase I exceeded the SCAQMD daily emission thresholds for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA. These unmitigated peak daily construction emissions exceeded the thresholds for VOC, NO_X, SO_X, PM_{10}, and PM_{25} under NEPA.

The unmitigated combined peak daily construction emissions during Phases II and III would exceed the SCAQMD daily emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA. Under NEPA, the unmitigated peak daily construction would exceed the thresholds of NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

The largest contributors to peak daily construction emissions include transit and hoteling of general cargo vessels during crane delivery (a total of one ship for Phase I, two ships for Phase II, and one ship for Phase III), dredging activities during wharf construction, tugboats hauling barges to and from Catalina Island and Berth 205, and grading during backlands construction (fugitive dust).

CEQA Impact Determination

Without mitigation, the proposed Project would exceed the daily construction emission thresholds for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during construction of Phase I, and would exceed the thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during construction of Phases II and III. Therefore, significant impacts under CEQA would occur.

NEPA Impact Determination

Without mitigation, the proposed Project would exceed the daily construction emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during construction of Phase I, and would exceed the thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during construction of Phases II and III. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures for proposed Project construction were derived, where feasible, from the proposed NNI measures, Port Community Advisory Committee (PCAC) recommended measures, and the CAAP and in consultation with the Port. A complete proposed Project feasibility review of the NNI and PCAC measures under the proposed Project is included in Appendix C. Table 3.2-19 summarizes all construction mitigation measures and regulatory requirements assumed in the mitigated emission calculations.

Table 3.2-19. Regulations, Agreements, and Mitigation Measures Assumed in the Construction Emissions with Mitigation

Off-Road Construction Equipment	On-Road Trucks	Tugboats	General Cargo Ships	Fugitive Dust
PART 1. Regulations and Agreements Included in the Mitigated Emission Calculations				
Emission Standards for Nonroad Diesel Engines – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal construction equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006.	**Emission Standards for Onroad Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits starting 2/1/05.	**California Diesel Fuel Regulations** – 500-ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006.	None	**SCAQMD Rule 403 Compliance** – 75 percent reduction in fugitive dust due to watering three times per day.
PART 2. Mitigation Measures Included in the Mitigated Emission Calculations				
AQ-1: Emulsified Fuels for Derrick Barges – applies to Phase I of construction. **AQ-4: Fleet Modernization for Construction Equipment** – Applies to Phases II and III only. This measure is more stringent than Emission Standards for Nonroad Diesel Engines (above) for equipment subject to this mitigation measure during Phases II and III.	**AQ-3: Fleet Modernization for On-Road Trucks** – applies to Phases II and III only. This measure is more stringent than Emission Standards for Onroad Trucks (above).	**AQ-1: Repowered Harborcraft –** applies to Phases II and III only.	**AQ-2: Expanded VSR Program** – applies to Phases II and III only.	**AQ-6: Additional Fugitive Dust Control** – applies to Phases II and III only. Achieve 90 percent reduction.
PART 3. Mitigation Measures Not Included in the Mitigated Emission Calculations[a]				
AQ-5: Best Management Practices – applies to Phases II and III only**.** **AQ-7: General Mitigation Measure –** applies to Phases II and III only**.** **AQ-8: Special Precautions near Sensitive Sites –** applies to Phases II and III only.				

[a]These mitigation measures were not included in the calculations because their effectiveness has not been established.

The following mitigation measures would reduce criteria pollutant emissions associated with Project construction. **Mitigation Measure (MM)** A**Q-1** as it pertains to derrick barges was implemented during Phase I of construction. **MM AQ-1** as it pertains to harbor craft would apply to Phases II and III of construction. All other mitigation measures **(MM AQ-2** through **MM AQ-8**) would apply to Phases II and III of construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

MM AQ-1 ***Harbor Craft used during construction***

Phase I: All diesel-powered derrick barges used for pile driving shall use emulsified diesel fuel.

Phases II and III: All harbor craft used during the construction phase of the project shall be, at a minimum, repowered to meet the cleanest existing marine engine emission standards or USEPA Tier 2. Additionally, where available, harbor craft shall meet the proposed USEPA Tier 3 (which are proposed to be phased-in beginning 2009) or cleaner marine engine emission standards.

The above harbor craft measure shall be met unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

- A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.
- A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application is not yet approved, or the application has been approved, but funds are not yet available.
- A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

MM AQ-2: ***Cargo Ships***

Phases II and III:

1. **All cargo ships used for terminal crane deliveries shall comply with the expanded VSRP of 12 knots from 40 nm from Point Fermin to the Precautionary Area.**

   The general cargo ship used to deliver cranes in Phase I is assumed not to have observed the VSRP.

MM AQ-3: ***Fleet Modernization for On-Road Trucks***

Phases II and III:

1. **Trucks hauling materials such as debris or fill shall be fully covered while operating off Port property.**
2. **Idling shall be restricted to a maximum of 5 minutes when not in use.**
3. **USEPA Standards:**

   All on-road heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used onsite or to transport materials to and from the site shall comply with EPA 2004 on-road PM emission standards and be the cleanest available NOX (0.10 grams per brake horsepower-hour [g/bhp-hr] PM10 and 2.0 g/bhp-hr NO X). In addition, all on-road trucks shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emissions-control device used by the contractor shall achieve emissions reductions no less than what could be achieved by a Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations.

   A copy of each unit's certified, USEPA rating, BACT documentation, and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment

   The above USEPA Standards measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

   - A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.
   - A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application is not yet approved, or the application has been approved, but funds are not yet available.
   - A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

MM AQ-4: ***Fleet Modernization for Construction Equipment***

Phases II and III:

1. **Construction equipment shall incorporate, where feasible, emissions-savings technology such as hybrid drives and specific fuel economy standards.**
2. **Idling shall be restricted to a maximum of 5 minutes when not in use.**
3. **Tier Specifications:**
   a. **January 1, 2009, to December 31, 2011: All off-road diesel-powered construction equipment greater than 50 hp, except derrick barges and marine vessels, shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similar-sized engine as defined by CARB regulations.**

   b. **Post January 1, 2012: All off-road diesel-powered construction equipment greater than 50 hp, except derrick barges and marine vessels, shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions-control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions-control strategy for a similar-sized engine as defined by CARB regulations.**

   A copy of each unit's certified Tier specification, BACT documentation and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment.

The above "Tier Specifications" measures shall be met, unless one of the following circumstances exist, and the contractor is able to provide proof that any of these circumstances exists:

- A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.
- A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application is not yet approved, or the application has been approved, but funds are not yet available.
- A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the

uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

MM AQ-5: ***Best Management Practices***

Phases II and III:

The following types of measures are required on construction equipment (including on-road trucks):

1. **Use of diesel oxidation catalysts and catalyzed diesel particulate traps**
2. **Maintain equipment according to manufacturers' specifications**
3. **Restrict idling of construction equipment to a maximum of 5 minutes when not in use**
4. **Install high-pressure fuel injectors on construction equipment vehicles**

LAHD shall implement a process by which to select additional BMPs to further reduce air emissions during construction. The LAHD shall determine the BMPs once the contractor identifies and secures a final equipment list.

MM AQ-6: ***Additional Fugitive Dust Controls.*** **The calculation of fugitive dust (PM10) from Project earth-moving activities assumes a 75 percent reduction from uncontrolled levels to simulate rigorous watering of the site and use of other measures (listed below) to ensure Project compliance with SCAQMD Rule 403.**

The construction contractor shall further reduce fugitive dust emissions to 90 percent from uncontrolled levels. The construction contractor shall designate personnel to monitor the dust control program and to order increased watering, as necessary, to ensure a 90 percent control level. Their duties shall include holiday and weekend periods when work may not be in progress.

The following measures, at minimum, must be part of the contractor Rule 403 dust control plan:

- **Active grading sites shall be watered one additional time per day beyond that required by Rule 403.**
- **Contractors shall apply approved nontoxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.**
- **Construction contractors shall provide temporary wind fencing around sites being graded or cleared.**

- **Trucks hauling dirt, sand, or gravel shall be covered or shall maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code.**
- **Construction contractors shall install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site.**
- **The grading contractor shall suspend all soil disturbance activities when winds exceed 25 mph or when visible dust plumes emanate from a site; disturbed areas shall be stabilized if construction is delayed.**

MM AQ-7: ***General Mitigation Measure.*** **For any of the above mitigation measures (MM AQ-1 through AQ-6), if a CARB-certified technology becomes available and is shown to be as good as or better in terms of emissions performance than the existing measure, the technology could replace the existing measure pending approval by the Port.**

MM AQ-8: ***Special Precautions near Sensitive Sites.*** **All construction activities located within 1,000 feet of sensitive receptors (defined as schools, playgrounds, daycares, and hospitals) shall notify each of these sites in writing at least 30 days before construction activities begin.**

Residual Impacts

Table 3.2-20 presents the maximum daily criteria pollutant emissions associated with construction of the proposed Project, after the application of **MM AQ-1** through **MM AQ-8.** The emissions shown in italics represent the construction activities that combine to produce the maximum daily emissions for each construction phase. For example, in Phase II, five of the eight construction activities would combine to produce maximum daily emissions: construction of Berth 102, construction of Berth 100-109 Buildings, construct 18 of 45-acre backlands improvements at Berth 100, crane delivery and installation, and worker trips (Phase II). The other three construction activities would not be active during this time.

During Phase I, MM AQ-1 resulted in no change in maximum daily emissions relative to unmitigated Project construction. Although MM AQ-1 did reduce emissions from the derrick barge during pile driving, this activity did not overlap with the activities producing maximum daily emissions. Therefore, the air quality impact of Phase I construction after mitigation remained significant for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA, and significant for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under NEPA.

Table 3.2-20. Peak Daily Emissions Associated with Berth 97-109 Terminal Construction Activities – Proposed Project With Mitigation

Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
	Daily Emissions (lb/day)					
Phase I						
Construction of a 1,000-foot Wharf at Berth 100	*32*	*100*	*506*	*5*	*27*	*25*
Construction of a 200-foot North Extension of Wharf at Berth 100 [b]	42	139	502	5	27	25
Crane Delivery and Installation [e]	*48*	*128*	*1,316*	*1,453*	*154*	*124*
Berth 100 75-Acre Backlands Development	*29*	*102*	*226*	*1.4*	*205*	*51*
Construction of Bridge 1	8	39	69	0.4	3	3
Berth 121 Gate Modifications	3	9	21	0.1	1	1
Worker Trips	*20*	*264*	*34*	*0*	*20*	*2*
Peak Daily – Phase I – CEQA Impact [f]	**129**	**594**	**2,082**	**1,460**	**407**	**202**
Peak Daily – Phase I – NEPA Impact [f]	**80**	**229**	**1,822**	**1,458**	**182**	**149**
Thresholds	75	550	100	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Net Mitigation Effectiveness	0%	0%	0%	0%	0%	0%
Phase II						
Construct Berth 102	*11*	*39*	*116*	*0.16*	*2*	*2*
Construct Berth 100-109 Buildings	*5*	*22*	*47*	*0.06*	*1*	*1*
Construct 18 of 45-acre Backlands	*11*	*51*	*113*	*0.15*	*22*	*6*
Construct Bridge 2	5	22	43	0.05	1	1
Construct 17 of 45-acre Backland	11	50	111	0.15	21	6
Construct 10 of 45-acre Backlands (Behind Rear Berth 102)	11	50	111	0.15	13	5
Crane Delivery and Installation	*36*	*97*	*1,039*	*1,208*	*125*	*101*
Worker Trips	*2*	*27*	*4*	*0.02*	*5*	*1*
Peak Daily – Phase II	**66**	**237**	**1,318**	**1,209**	**155**	**111**
Phase III						
South Extension of Berth 100	*17*	*63*	*303*	*0*	*16*	*15*
Construct 25-acre Backlands (Behind Berth 100)	*11*	*48*	*109*	*0*	*29*	*8*
Crane Delivery and Installation	*36*	*96*	*1,039*	*1,208*	*125*	*101*
Worker Trips	*2*	*25*	*3*	*0*	*5*	*1*
Peak Daily – Phase III	**67**	**232**	**1,454**	**1,209**	**175**	**124**
Peak Daily – Phases II and III Combined – CEQA Impact [c,f]	**67**	**237**	**1,454**	**1,209**	**175**	**124**
Peak Daily – Phases II and III Combined – NEPA Impact [c,f]	**42**	**110**	**1,228**	**1,208**	**136**	**112**
Thresholds	75	550	100	150	150	55
CEQA Significant?	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**No**	**No**	**Yes**	**Yes**	**No**	**Yes**
Net Mitigation Effectiveness	24%	18%	22%	17%	30%	23%

Notes:

a) Only the emissions shown in italics are included in the maximum daily emissions for each phase. All other emissions would occur at other times and, therefore, would not contribute to the maximum daily emissions.

b) CO emissions for a 200-foot wharf extension are higher than for a 1,000-foot wharf extension because the 200-foot wharf extension includes dredge and dike filling. The 1,000-foot extension mainly is rebuilding an existing wharf.

c) Maximum daily emissions from Phases II and III combined represent the sum of the emissions from the following activities assumed to occur on the same day: South Extension of Berth 100 (Phase III), Construct 25-acre Backlands behind Berth 100 (Phase III), Crane Delivery and Installation (Phase III), and Worker Trips (Phase III).

d) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

f) The CEQA Impact equals total Project construction emissions minus CEQA baseline construction emissions (which are zero). The NEPA impact equals total Project construction emissions minus NEPA baseline construction emissions as reported in Table 3.2-9.

During Phases II and III, **MMAQ-1** through **MM AQ-8** would reduce maximum daily construction emissions of VOC to a less than significant level under CEQA. Emissions of CO would remain less than significant under CEQA. Emissions of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ would be reduced, but would remain significant under CEQA.

During Phases II and III, **MM AQ-1** through **MM AQ-8** would reduce maximum daily construction emissions of PM_{10} to a less than significant level under NEPA. Emissions of VOC and CO would remain less than significant under NEPA. Emissions of NO_X, SO_X, and $PM_{2.5}$ would be reduced, but would remain significant under NEPA.

MM AQ-5, **MM AQ-7**, and **MM AQ-8**, the effects of which were not quantified in Table 3.2-20, could further reduce construction emissions during Phases II and III, depending on their effectiveness. However, emissions of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ likely would remain significant under CEQA, and emissions of NO_X, SO_X, and $PM_{2.5}$ likely would remain significant under NEPA.

Proposed Project – Impact AQ-2: Proposed Project construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Dispersion modeling of onsite Project construction emissions was performed to assess the impact of the proposed Project on local ambient air concentrations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2.

Table 3.2-21 presents the maximum offsite ground level concentrations of NO_2, CO, PM_{10}, and $PM_{2.5}$ from construction of Phases II and III without mitigation. Unmitigated Phase I concentrations were not modeled because mitigation was implemented during Phase I.

Table 3.2-21 shows that the maximum offsite 24-hour PM_{10} and $PM_{2.5}$ concentration increments and the maximum 1-hour and 8-hour CO concentrations would not exceed the SCAQMD thresholds. The maximum offsite 1-hour NO_2 concentration of 353 $\mu g/m^3$, including background, would exceed the SCAQMD significance threshold.

CEQA Impact Determination

Without mitigation, maximum offsite ambient pollutant concentrations associated with construction Phases II and III of the Berth 97-109 Container Terminal would be significant for NO_2 (1-hour average). Therefore, significant impacts under CEQA would occur.

NEPA Impact Determination

Without mitigation, maximum offsite ambient pollutant concentrations associated with Phases II and III of construction would be significant for NO_2 (1-hour average). Therefore, significant impacts under NEPA would occur.

Table 3.2-21. Maximum Offsite Ambient Concentrations – Proposed Project Construction without Mitigation

Pollutant	Averaging Time	Background Concentration (µg/m^3)	Maximum Concentration of Phases II and III (without Background) (µg/m^3)	Total Ground- Level Concentration of Phases II and III (µg/m^3)	SCAQMD Threshold [a] (µg/m^3)
NO_2	1-hour	263	89.5	**353**	338
CO	1-hour	4,809	40.5	4,850	23,000
	8-hour	4,008	9.08	4,017	10,000
PM_{10}	24-hour	-	4.4	-	10.4
$PM_{2.5}$	24-hour	-	1.3	-	10.4

Notes:

a) Exceedances of the thresholds are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the concentrations without background are compared to the thresholds. The thresholds for NO_2 and CO are absolute thresholds; therefore, the total concentrations (with background) are compared to the thresholds. NO_2 thresholds represent the 2007 adopted CAAQS values.

b) Phase I concentrations were not modeled without mitigation because mitigation was implemented during Phase I.

c) Because Phases II and III have overlapping construction schedules, the modeling results for Phases II and III are based on the maximum combined emissions from these two phases for those construction activities with overlapping schedules.

d) Construction schedules are assumed to be 10 hours per day for all construction equipments and vehicles. Ships hoteling are assumed to be 24 hours per day.

e) In accordance with SCAQMD guidance (SCAQMD, 2005), ship transit emissions, tugboat emissions, and offsite haul truck transport emissions are considered offsite emissions and were not included in the modeling. However, ship hoteling and onsite truck emissions were included in the modeling.

f) NO_2 concentrations were calculated assuming a NO_X to NO_2 conversion rate of 75 percent (SCAQMD, 2003). This conversion rate assumes the maximum impact locations occur within 2,000 meters of the emission sources that contribute the most to the modeled concentrations. This is a conservative approach since the majority of emission sources that contribute to the maximum NO_2 impact are within 1,500 meters of this location, where the NO_2 conversion factor for this distance would be lower. The relatively large source-receptor distance and high NO_2 conversion rate was conservatively selected based on the elongated shape of the project terminal.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I; and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Table 3.2-22 presents the maximum offsite ground level concentrations of NO_2, CO, PM_{10}, and $PM_{2.5}$ from all construction phases of the terminal after mitigation. With implementation of these mitigation measures, offsite ambient concentrations from Phase I construction activities were significant for PM_{10} (24-hour average) and NO_2 (1-hour average), but less than significant for $PM_{2.5}$ and CO. Offsite ambient concentrations from construction Phases II and III after mitigation would be less than significant for all pollutants.

Residual Impacts

The residual air quality impacts were significant during Phase I construction, for 1-hour NO_2 and 24-hour PM_{10}. The residual air quality impacts during Phases II and III of construction would be less than significant.

Table 3.2-22. Maximum Offsite Ambient Concentrations – Proposed Project Construction with Mitigation

Pollutant	Averaging Time	Background Concentration (µg/m^3)	Maximum Concentration of Phase I (without background) (µg/m^3)	Total Ground Level Concentration of Phase I (µg/m^3)	Maximum Concentration of Phases II and III (without background) (µg/m^3)	Total Ground Level Concentration of Phases II and III (µg/m^3)	SCAQMD Threshold [a] (µg/m^3)
NO_2	1-hour	263	117.7	**381**	70.5	333	338
CO	1-hour	4,809	62.9	4,872	39.1	4,848	23,000
	8-hour	4,008	14.2	4,022	8.8	4,017	10,000
PM_{10}	24-hour	-	**12.0**	-	1.7	-	10.4
$PM_{2.5}$	24-hour	-	3.2	-	0.79	-	10.4

Notes:

a) Exceedances of the thresholds are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the concentrations without background are compared to the thresholds. The thresholds for NO_2 and CO are absolute thresholds; therefore, the total concentrations (with background) are compared to the thresholds. NO_2 thresholds represent the 2007 adopted CAAQS values.

b) Because Phases II and III have overlapping construction schedules, the modeling results for Phases II and III are based on the maximum combined emissions from these two phases for those construction activities with overlapping schedules.

c) Construction schedules are assumed to be 10 hours per day for all construction equipments and vehicles. Ships hoteling are assumed to be 24 hours per day.

d) In accordance with SCAQMD guidance (SCAQMD, 2005), ship transit emissions, tugboat emissions, and offsite haul truck transport emissions are considered offsite emissions and were not included in the modeling. However, ship hoteling and onsite truck emissions were included in the modeling.

e) NO_2 concentrations were calculated assuming NO_X to NO_2 conversion rate of 75 percent (SCAQMD, 2003). This conversion rate assumes the maximum impact locations occur within 2,000 meters of the emission sources that contribute the most to the modeled concentrations. This is a conservative approach since the majority of emission sources that contribute to the maximum NO_2 impact are within 1,500 meters of this location, where the NO_2 conversion factor for this distance would be lower. The relatively large source-receptor distance and high NO_2 conversion rate was conservatively selected based on the elongated shape of the project terminal.

Proposed Project – Impact AQ-3: The proposed Project would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-16.

Table 3.2-23 presents the unmitigated average daily criteria pollutant emissions associated with operation of the proposed Project. The average daily emissions represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day-to-day depending on ship arrivals. Emissions were estimated for 4 Project study years: 2005, 2015, 2030, and 2045. Comparisons to the CEQA and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with the proposed Project assume the following activity levels:

- Annual container volumes for Berths 97-109 are estimated to be 403,200 TEUs in 2005; 1,164,400 TEUs in 2015; and 1,551,000 TEUs in 2030 and 2045.
- Annual ship calls to Berths 97-109 were 52 visits in 2005; and are estimated to be 182 visits (3 weekly + 1 biweekly) in 2015, and 234 visits (4 weekly + 1 biweekly) in 2030 and 2045.

Table 3.2-23. Average Daily Operational Emissions Without Mitigation – Proposed Project

	Average Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	16	42	548	472	49	39
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	154	553	1,502	13	73	67
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**431**	**1,732**	**5,024**	**946**	**344**	**265**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	371	1,507	4,458	936	313	236
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	248	-969	3,949	942	325	246
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	117	245	2,713	1,561	240	192
Ships – Hoteling	31	83	1,080	924	96	77
Tugboats	1	10	56	0	2	2
Trucks	302	1,290	2,577	5	235	112
Trains	52	181	932	1	28	26
Rail Yard Equipment	3	126	107	0	3	3
Terminal Equipment	63	1,635	1,421	4	48	44
Worker Trips	7	88	12	0	24	5
Total – Project Year 2015	**576**	**3,660**	**8,898**	**2,495**	**676**	**461**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	516	3,434	8,332	2,484	645	432
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	569	2,808	8,826	2,495	674	458
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-23. Average Daily Operational Emissions Without Mitigation – Proposed Project

	Average Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2030						
Ships – Transit and Anchoring	160	336	3,711	2,127	328	263
Ships – Hoteling	35	96	1,243	1,055	110	88
Tugboats	2	13	54	0	2	2
Trucks	169	721	1,521	6	215	61
Trains	52	226	951	1	26	23
Rail Yard Equipment	2	145	20	0	1	1
Terminal Equipment	30	1,958	322	6	8	8
Worker Trips	5	53	6	0	29	6
Total – Project Year 2030	**456**	**3,548**	**7,828**	**3,196**	**719**	**451**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	396	3,323	7,262	3,186	688	422
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	448	2,659	7,752	3,196	717	448
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	160	336	3,711	2,127	328	263
Ships – Hoteling	35	96	1,243	1,055	110	88
Tugboats	2	13	54	0	2	2
Trucks	158	676	1,440	6	212	58
Trains	46	226	882	1	22	20
Rail Yard Equipment	2	145	20	0	1	1
Terminal Equipment	30	1,958	322	6	8	8
Worker Trips	4	45	4	0	29	6
Total – Project Year 2045	**439**	**3,494**	**7,677**	**3,196**	**713**	**445**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	379	3,269	7,111	3,186	681	416
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	431	2,626	7,601	3,196	710	442

Table 3.2-23. Average Daily Operational Emissions Without Mitigation – Proposed Project

	Average Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative-fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

- Without mitigation, the VSRP compliance rate was assumed to be 68 percent in 2005, 2015, 2030, and 2045. This represents the actual China Shipping compliance rate in 2005 (pers. comm., Maggay, 2005).
- The fraction of all TEUs moving through on-dock rail (Berth 121-131 ICTF) is estimated to be 19.5 percent in 2005, 20.3 percent in 2015, and 16.9 percent in 2030 and 2045. The fraction of all TEUs moving through off-dock rail yards (Carson ICTF, Los Angeles rail yards, or Inland Empire rail yards) is estimated to be 19.1 percent in 2005, 18.3 percent in 2015, and 19.6 percent in 2030 and 2045. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 61.4 percent in 2005, 61.4 percent in 2015, and 63.5 percent in 2030 and 2045.
- The proposed Project would generate 1,529; 4,364; 5,055; and 5,055 peak daily truck trips in 2005, 2015, 2030, and 2045 respectively.
- The Project would generate 448; 1,296; 1,634; and 1,634 annual one-way train trips in 2005, 2015, 2030, and 2045 respectively.

Table 3.2-24 summarizes peak daily unmitigated emissions estimated for the proposed Project operations in years 2005, 2015, 2030, and 2045. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the terminal. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently and are based upon a lesser known and therefore more theoretical set of conservative assumptions. Comparisons to the CEQA and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

Table 3.2-24. Peak Daily Operational Emissions Without Mitigation – Proposed Project

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	379	1,359	3,693	31	179	165
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**945**	**3,428**	**12,785**	**5,651**	**1,027**	**824**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	784	2,822	11,262	5,622	942	747
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	453	-3,840	9,894	5,640	974	774
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	303	643	7,587	7,362	888	710
Ships – Hoteling	74	200	2,653	4,811	411	329
Tugboats	3	21	112	0	4	4
Trucks	403	1,724	3,443	6	313	150
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	4	143	121	0	4	3
Terminal Equipment	159	4,164	3,620	11	123	113
Worker Trips	9	107	14	0	29	6
Total – Project Year 2015	**1,033**	**7,272**	**18,933**	**12,192**	**1,814**	**1,353**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	871	6,665	17,410	12,164	1,729	1,275
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	1,013	4,981	18,740	12,191	1,807	1,346

Table 3.2-24. Peak Daily Operational Emissions Without Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	315	668	7,876	7,625	921	737
Ships – Hoteling	74	200	2,653	4,811	411	329
Tugboats	3	21	84	0	4	3
Trucks	207	883	1,861	8	263	74
Trains	123	539	2,265	2	61	56
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	71	4,536	747	13	20	18
Worker Trips	6	65	7	0	35	7
Total – Project Year 2030	**802**	**7,170**	**15,528**	**12,460**	**1,716**	**1,225**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	641	6,564	14,005	12,432	1,631	1,147
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	780	4,777	15,323	12,460	1,708	1,217
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	315	668	7,876	7,625	921	737
Ships – Hoteling	74	200	2,653	4,811	411	329
Tugboats	3	21	84	0	4	3
Trucks	194	828	1,762	8	259	71
Trains	110	539	2,100	2	52	47
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	71	4,536	747	13	20	18
Worker Trips	5	55	5	0	35	7
Total – Project Year 2045	**775**	**7,105**	**15,263**	**12,460**	**1,703**	**1,213**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	614	6,498	13,740	12,432	1,618	1,135
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-24. Peak Daily Operational Emissions Without Mitigation – Proposed Project

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	754	4,768	15,060	12,460	1,695	1,206
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative-fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The peak daily emission estimates for proposed Project operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

- Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project's fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2005, one 5,000 to 6,000 TEU capacity vessel arrives and hotels; (b) in 2010, one 5,000 to 6,000 TEU capacity vessel arrives and hotels, and another 5,000 to 6,000 TEU capacity vessel hotels and departs; (c) in 2015, one 8,000 to 9,000 TEU capacity vessel arrives and hotels, and a 5,000 to 6,000 TEU capacity vessel hotels and departs; (d) and in 2030 and 2045, one 9,000 to 11,000 TEU capacity vessel arrives and hotels, and a 5,000 to 6,000 TEU capacity vessel hotels and departs. The time each vessel is assumed to hotel equals 24 hours minus the ship's transit time between the South Coast Air Basin overwater boundary and the berth. Without mitigation, the emissions also assume that each ship uses residual fuel with a worst case sulfur content of 4.5 percent.
- Trains and rail yard equipment: (a) In 2005, 2010, and 2015, the peak day scenario for the Berth 121-131 (on-dock) rail yard assumes that the equivalent of one four-locomotive train carrying only Project-generated cargo arrives and is completely disassembled, and a second four-locomotive train carrying only Project-generated cargo is fully assembled and departs. The same assumption is also made for the off-dock rail yards in total. (b) In 2030 and 2045, the peak day scenario for the Berth 121-131 (on-dock) rail yard assumes that the equivalent of two four-locomotive trains carrying only Project-generated cargo arrive and are completely disassembled, and two additional four-locomotive trains carrying only Project-generated cargo are fully assembled and depart. The same assumption is also made for the off-dock rail yards in total.

- Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 33 percent more truck trips on the peak day compared to an average day for 2005, 2010, and 2015, and about 22 percent more truck trips than an average day for 2030 and 2045. The peaking factor is lower in 2030 and 2045 because port activities are assumed to be more evenly spread out during the year because of the higher throughput (that is, all months are assumed to be equally busy).
- Terminal equipment: A peak day factor for cargo-handling equipment was developed by determining the maximum number of TEUs that could be moved in a day relative to the annual TEU throughput. The maximum daily TEU throughput is a composite of the peak day activity at the wharf (ship loading and unloading), gate (truck trips), and Berth 121-131 (on-dock) rail yard (train loading and unloading). Peak daily container throughput at the wharf was calculated assuming all available cranes at the wharf would be simultaneously loading and unloading containers from ships. The number of available cranes would be 4 in 2005, 9 in 2010, and 10 in 2015 and beyond. Peak daily container throughputs at the gate and on-dock rail yard were determined based on the peak daily truck and train trips, described in the preceding paragraphs. The resulting peak day factors for terminal equipment, relative to an average day of activity, were estimated to be 2.5 for 2005, 3.8 for 2010, 2.5 for 2015, and 2.3 for 2030 and 2045.

Due to the lengthy construction period of Phases II and III, operational activities would substantially overlap with construction activities. The SCAQMD has requested that total Project emissions be estimated during a year when construction and operational activities substantially overlap. Year 2010 was chosen as a representative year during which construction and operation activities would overlap. Table 3.2-25 shows the combined total of peak daily construction and operational emissions for year 2010.

The net changes in combined (construction plus operational) emissions relative to the CEQA and NEPA baseline emissions are compared to the SCAQMD operational thresholds.

Table 3.2-25. Peak Daily 2010 Construction and Operational Emissions – Proposed Project without Mitigation

	Peak Daily Emissions (lb/day)					
Project Year 2010	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Phase II						
Construct Berth 102	15	57	–	–	–	–
Construct Berth 100-109 Buildings	7	25	–	–	–	–
Construct 18 of 45-acre Backlands	18	62	–	–	–	–
Crane Delivery and Installation	46	117	–	–	–	–
Worker Trips	2	27	–	–	–	–
Phase III						
South Extension of Berth 100	–	–	442	0	19	18
Construct 25-acre Backlands (Behind Berth 100)	–	–	127	0	73	19

Table 3.2-25. Peak Daily 2010 Construction and Operational Emissions – Proposed Project without Mitigation

	Peak Daily Emissions (lb/day)					
Project Year 2010	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Crane Delivery and Installation	–	–	1,300	1,452	154	123
Worker Trips	–	–	3	0.02	5	0.9
Maximum Daily Emissions – Construction Phases 2 and 3 Combined[a]	**88**	**287**	**1,872**	**1,453**	**250**	**161**
Operation						
Ships – Transit and Anchoring	255	544	6,425	6,273	753	602
Ships – Hoteling	70	190	2,516	4,621	392	313
Tugboats	3	21	126	0	4	4
Trucks	435	1,959	3,787	4	286	172
Trains	84	269	1,481	31	48	45
Rail Yard Equipment	4	134	115	0	3	3
Terminal Equipment	149	3,051	2,794	8	95	87
Worker Trips	9	109	14	0	20	4
Maximum Daily Emissions – Operation	**1,009**	**6,276**	**17,258**	**10,938**	**1,601**	**1,230**
Total – Construction & Operation – Project Year 2010	**1,097**	**6,563**	**19,130**	**12,391**	**1,851**	**1,391**
CEQA Baseline Emissions [b]	161	607	1,523	28	85	78
CEQA Impact [c]	**936**	**5,956**	**17,607**	**12,363**	**1,766**	**1,313**
NEPA Baseline Emissions [d]	894	16,187	3,532	1.3	95	66
NEPA Impact [c]	**203**	**-9,624**	**15,598**	**12,390**	**1,756**	**1,325**
Thresholds [e]	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

a) Maximum emissions from Phases II and III combined assume simultaneous occurrence of construction of Berth 102, Berth 100-109 Buildings, 18 of the 45-acre backlands, and crane delivery for VOC and CO; and simultaneous occurrence of construction of Berth 100, construction of 25-acre backlands, and crane delivery for NO_X, PM_{10}, and $PM_{2.5}$.

b) CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

c) The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

d) NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

e) The SCAQMD operational thresholds are used in the significance determinations.

CEQA Impact Determination

From a CEQA perspective, proposed Project unmitigated peak daily emissions would exceed CEQA baseline emissions for all criteria pollutants in all four proposed Project study years. These increases would exceed the SCAQMD daily emission thresholds and the 10 tons per year VOC threshold for all pollutants in all four proposed Project study years. Therefore, from a CEQA perspective, the unmitigated air quality impacts associated with proposed Project operations would be significant for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2005, 2015, 2030, and 2045.

The year 2010 was chosen as the year that best represents a time when construction and operation activities would overlap. During this year, the increase in emissions relative to the CEQA baseline would be significant for all criteria pollutants.

NEPA Impact Determination

From a NEPA perspective, proposed Project unmitigated peak daily emissions would exceed NEPA baseline emissions for all criteria pollutants in all four proposed Project study years, with the exception of CO in 2005. These increases would exceed the SCAQMD daily emission thresholds for all criteria pollutants in all four proposed Project study years, with the exception of CO in 2005. The 10-ton/year VOC threshold would also be exceeded in all four proposed Project study years. Therefore, from a NEPA perspective, the unmitigated air quality impacts associated with proposed Project operations would be significant for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2005, and for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2015, 2030, and 2045.

The year 2010 was chosen as the year that best represents a time when construction and operation activities would overlap. During this year, the increase in emissions relative to the NEPA baseline would be significant for all criteria pollutants except CO. Emissions of CO would decrease relative to the NEPA baseline.

Mitigation Measures

The Superior Court of California in Los Angeles County issued an Amended Stipulated Judgment in March 2004 that identifies how China Shipping, in concert with the container terminal operator and the LAHD, will implement measures to mitigate air emissions from sources associated with the operation of the Berth 97-109 Container Terminal. Portions of **MM AQ-9**, **MM AQ-15**, and **MM AQ-17** represent the Project-level mitigation measures required by the Amended Stipulated Judgment. Although the other mitigation measures identified in this document are not required by the Amended Stipulated Judgment, they are nonetheless included for proposed Project operations based on potentially feasible NNI measures, PCAC recommended measures, San Pedro Bays Ports CAAP, and additional consultation with the Port. Table 3.2-27 summarizes all operational mitigation measures and regulatory requirements included in the mitigated emission calculations. Table 3.2-26 details how the Project mitigation measures compare to those identified in the San Pedro Bay Ports CAAP. A complete proposed Project feasibility review of the PCAC and NNI measures is included in Appendix C.

Table 3.2-26. Comparison between San Pedro Bay Ports CAAP Control Measures and Berth 97-109 Terminal EIS/EIR Proposed Mitigation Measures.

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
HDV-1	Performance Standards for On-Road Heavy-Duty Vehicles (HDVs)	All frequent caller trucks and semi-frequent caller container trucks model year (MY) 1992 and older will meet or be cleaner than the EPA 2007 Heavy-Duty Highway Rule on-road emissions standard (0.015 g/bhp-hr for PM) and the cleanest available NO_X at time of replacement. Semi-frequent caller container trucks MY1993-2003 will be equipped with the maximum CARB verified emissions reduction technologies currently available.	**MM AQ-19:** Fleet Modernization for On-Road Trucks. Heavy-duty diesel trucks entering the Berth 97-109 terminal shall meet the USEPA 2007 emission standards for on-road heavy-duty diesel engines (USEPA 2001) in the following percentages: 50% in 2009, 70% in 2010, 90% in 2011, 100% in 2012 and thereafter. **MM AQ-20:** Heavy-duty diesel trucks entering the Berth 97-109 Terminal shall be LNG-fueled in the following percentages: 50% in 2012 and 2013, 70% in 2014 through 2017, and 100% in 2018 and thereafter.	**MM AQ-19** and **MM AQ-20** comply with the overall truck modernization program described in the CAAP. The Port is largely responsible for this mitigation measure through a truck program being developed as part of the CAAP. The phase-in of LNG trucks goes beyond HDV-1. The terminal operator will be responsible for ensuring gate restrictions and tracking.
HDV-2	Alternative Fuel Infrastructure for Heavy-Duty Natural Gas Vehicles	Construct LNG or compressed natural gas (CNG) refueling stations.	No applicable measure.	This measure will be implemented directly by the Ports. The Port of Long Beach, in conjunction with the Port of Los Angeles, recently released a RFP seeking proposals to design, construct and operate a public LNG fueling and maintenance facility on Port of Los Angeles property.
OGV-1	OGV Vessel Speed Reduction (VSR)	OGVs that call at the SPB Ports shall not exceed 12 knots (kts) within 20 nautical miles (nm) of Point Fermin (extending to 40 nm in future).	**MM AQ-10:** Vessel Speed Reduction Program. Vessels that call at the Berth 97-109 terminal shall comply with the expanded VSRP of 12 kts within 40 nm of Point Fermin and the Precautionary Area – 100% starting January 1, 2009.	**MM AQ-10** complies with OGV-1. The CAAP targets a 95% compliance rate through lease provisions.
OGV-2	Reduction of At-Berth OGV Emissions	Each Port will develop the infrastructure required to provide shore-power capabilities to all container and cruise ship berths. On a case-by-case basis, other vessel types, like specially outfitted tankers or reefer terminals, will be evaluated for the application of shore-power.	**MM AQ-9:** Alternative Maritime Power (AMP). Ships calling at the Berth 97-109 terminal shall use AMP while hoteling in the Port in the following percentages: 60% from January 1 to June 30, 2005; 70% starting July 1, 2005; 90% starting January 1, 2010; and 100% starting January 1, 2011.	**MM AQ-9** complies with OGV-2. The CAAP.

Table 3.2-26. Comparison between San Pedro Bay Ports CAAP Control Measures and Berth 97-109 Terminal EIS/EIR Proposed Mitigation Measures.

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
OGV-3	OGV Auxiliary Engine Fuel Standards	Require ship's auxiliary engines to operate using MGO fuels with sulfur content ≤0.2% S in their auxiliary engines, while inside the VSR zone (described in CAAP-OGV1). The program would start out at 20 nm from Point Fermin and would be expanded to 40 nm from Point Fermin	**MM AQ-11:** Vessels that call at the Berth 97-109 terminal shall use low-sulfur fuel (maximum sulfur content of 0.2%) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin (including hoteling for non-AMP ships) at the following annual participation rates: 30% in 2009, 50% in 2010, and 100% in 2013 and thereafter.	**MM AQ-11** complies with OGV-3 and OGV-4. The CAAP assumes full compliance of OGV-3 and OGV-4 pending technical feasibility and fuel availability. The phase-in schedule for **MM AQ-11** allows time for technical equipment upgrades, including installing new tanks and piping, on ships. These measures go beyond the pending CARB regulation by requiring ≤0.2% S MGO (prior to 2010) in both auxiliary and main engines, instead of requiring ≤0.5% S MDO or MGO for only OGV auxiliary engines.
OGV-4	OGV Main Engine Fuel Standards	Require ship's main engines to operate using MGO fuels with sulfur content ≤0.2% S in their main engines, while inside the VSR zone (described in CAAP-OGV1). The program would start out at 20 nm from Point Fermin and would be expanded to 40 nm from Point Fermin	**MM AQ-11:** Vessels that call at the Berth 97-109 terminal shall use low-sulfur fuel (maximum sulfur content of 0.2%) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin (including hoteling for non-AMP ships) at the following annual participation rates: 30% in 2009, 50% in 2010, and 100% in 2013 and thereafter.	See above discussion for OGV-3.
OGV-5	OGV Main & Auxiliary Engine Emissions Improvements	Focus on reducing DPM, NO_X, and SO_X emissions from OGV main engines and auxiliary engines. The goal of this measure is to reduce main and auxiliary engine DPM, NO_X, and SO_X emissions by 90%. The first engine emissions reduction technology for this measure will be the use of MAN B&W slide valves for main engines.	**MM AQ-12:** Slide Valves in Ship Main Engines. Vessels that call at the Berth 97-109 terminal shall be equipped with slide valves or equivalent on main engines in the following percentages: 25% in 2009, 50% in 2010, 75% in 2012, 100% in 2014 and thereafter.	**MM AQ-12** and **MM AQ-14** fully comply with OGV-5.

Table 3.2-26. Comparison between San Pedro Bay Ports CAAP Control Measures and Berth 97-109 Terminal EIS/EIR Proposed Mitigation Measures.

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
			MM AQ-14: New Vessel Builds. All new vessel builds shall incorporate NO_X and PM control devices on auxiliary and main engines. NO_X and PM control devices include, but are not limited to, the following technology where appropriate: (1) Selective Catalytic Reduction (SCR) technology, (2) exhaust gas recirculation, (3) in line fuel emulsification technology, (4) Diesel Particulate Filters (DPFs) or exhaust scrubbers, (5) common rail, (6) Low NO_X burners for boilers, (7) implementation of fuel economy standards by vessel class and engines, and (8) diesel-electric pod-propulsion system.	
CHE-1	Performance Standards for CHE	Sets fuel neutral purchase requirements for CHE, starting in 2007. Requires by 2010, all yard tractors operating at the ports will have the cleanest engines meeting USEPA Tier 4 non-road emission standards for PM and NO_X. All remaining CHE less than 750 hp will meet at a minimum the Tier 4 standards for PM and NO_X by 2012. Requires that all remaining CHE greater than 750 hp to meet Tier 4 standards for PM and NO_X by 2014 and prior to that, be equipped with the cleanest available Verified Diesel Emissions Control (VDEC).	**MM AQ-15:** Yard Tractors. All yard tractors operated at the Berth 97-109 terminal shall run on alternative fuel (LPG) beginning September 30, 2004, until December 31, 2014. Beginning January 1, 2015, all yard tractors operated at the Berth 97-109 terminal shall be the cleanest available NO_X alternative-fueled engines meeting 0.015 gm/hp-hr for PM. **MM AQ-16:** Yard Equipment (Rail Yard). Beginning January 1, 2009, all diesel-powered equipment operated at the Berth 121-131 terminal rail yard that handles containers moving through the Berth 97-109 terminal shall implement the following measures: ■ Beginning 1/1/2009, all equipment purchase shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hr-hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC.	**MM AQ-15** complies with CHE-1. **MM AQ-16** complies with CHE-1.

Table 3.2-26. Comparison between San Pedro Bay Ports CAAP Control Measures and Berth 97-109 Terminal EIS/EIR Proposed Mitigation Measures.

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
			■ By the end of 2012, all equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. ■ By the end of 2014, all equipment shall meet USEPA Tier 4 non-road engine standards. **MM AQ-17:** Yard Equipment (Terminal). Beginning in September 30, 2004, all diesel-powered toppicks and sidepicks operated at the Berth 97-109 terminal shall run on emulsified diesel fuel plus a DOC. DOCs plus emulsified fuel are assumed for 2004-2006. DOCs only are assumed from 2006- until they are turned over per the following: ■ Beginning in January 1, 2009, all diesel-powered terminal equipment (other than alternative-fueled yard tractors) at the Berth 97-109 terminal shall implement the following measures: ❑ Beginning January 1, 2009, all RTGs shall be electric. ❑ Beginning January 1, 2009, all toppicks shall have the cleanest available NO_X alternative fueled engines meeting 0.015 gm/hp-hr for PM. ❑ Beginning in January 1, 2009, all equipment purchases other than yard tractors, RTGs, and toppicks shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 Gm/hp-Hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 Gm/hp-Hr for PM. If there are no engines available that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC.	**MM AQ-17** complies with CHE-1.

Table 3.2-26. Comparison between San Pedro Bay Ports CAAP Control Measures and Berth 97-109 Terminal EIS/EIR Proposed Mitigation Measures.

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
			❑ By the end of 2012, all non-yard tractor terminal equipment less than 750 hp other than yard tractors, RTGs, and top picks shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. ❑ By the end of 2014, all terminal equipment other than yard tractors, RTGs, and top picks shall meet USEPA Tier 4 non-road engine standards.	
HC-1	Performance Standards for Harbor Craft	This measure will focus on harbor craft that have not already been repowered/retrofitted (including construction related harbor craft like dredges and support vessels). When candidate vessels are identified, the Ports will assist/require the owner/operator to repower or retrofit propulsion and auxiliary engines. For nonconstruction related candidates, Ports staff will assist the owners in applying for Carl Moyer Program incentive funding for the cleanest available engine that meets the emissions and cost effectiveness requirements. It should be noted, that several tugs operating at the Port of Long Beach are home-ported on private property (not Port property) and therefore will not be affected by this measure.	No mitigation assumed	This measure is a Portwide measure. terminal operators and shipping lines do not have a direct contractual relationship with tugboat operators and may be limited in providing the infrastructure necessary to implement HC-1. The Ports of Los Angeles and Long Beach shall implement HC-1 through a Port-wide Program as described in the CAAP. The Project air quality analysis assumes that a portion of the Port tugboat fleet will be re-powered through the CARB Carl Moyer Program.
RL-1	PHL Rail Switch Engine Modernization	A voluntary program initiated by the Ports in conjunction with PHL to modernize switcher locomotives used in Port service to meet Tier 2 locomotive engine standards and initiate the use of fuel emulsion in those engines. Also includes evaluation of alternative-powered switch engines including LNG and hybrid locomotives. In addition, a locomotive DOC and DPF will be evaluated and based on a successful demonstration, will be applied to all Tier 2 switcher locomotives. Also restricts future purchases to the cleanest locomotives available.	**MM AQ-18:** Beginning January 1, 2015, all yard locomotives at the Berth 121-131 Rail Yard that handle containers moving through the Berth 97-109 terminal shall be equipped with a diesel particulate filter (DPF).	Since the PHL Agreement is an existing program, the use of Tier 2 yard locomotives is assumed as part of the Project. The requirement for a DPF in **MM AQ-18** complies with RL-1.

Table 3.2-26. Comparison between San Pedro Bay Ports CAAP Control Measures and Berth 97-109 Terminal EIS/EIR Proposed Mitigation Measures.

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
RL-2	Existing Class 1 Railroad Operations	Effects only existing Class 1 railroad operations on Port property. Lays out stringent goals for switcher, helper, and long haul locomotives operating on Port properties. By 2011, all diesel-powered Class 1 switcher and helper locomotives entering Port facilities will be 90% controlled for PM and NO_X, will use 15-minute idle restrictors, and after January 1, 2007, the use of ultra-low sulfur diesel (ULSD) fuels. Starting in 2012 and fully implemented by 2014, the fleet average for Class 1 long haul locomotives calling at Port properties will be Tier III equivalent (Tier 2 equipped with DPF and SCR or new locomotives meeting Tier 3) PM and NO_X and will use 15-minute idle restrictors. Class 1 long haul locomotives will operate on ULSD while on Port properties by the end of 2007. Technologies to get to these levels of reductions will be validated through the Technology Advancement Program.	No mitigation assumed.	RL-2 affects only existing Class 1 rail yards (Class I rail yards are BNSF and UP). The Ports of Los Angeles and Long Beach shall implement RL-2 through a Port-wide Program as described in the CAAP. The Port is meeting with the Class I rail yards to discuss implementation of the Port-wide Program RL-3 effects all new or redeveloped rail yards. Mitigation for the Project on-dock rail yard is applied under RL-3 below.
RL-3	New and Redeveloped Rail Yards	New rail facilities, or modifications to existing rail facilities located on Port property, will incorporate the cleanest locomotive technologies, meet the requirements specified in CAAP-RL2, utilize “clean” CHE and HDV, and utilize available “green-container” transport systems.	No mitigation assumed.	The Project analysis assumes the Berth 121-131 rail yard remains at its current physical capacity.

Table 3.2-27. Regulations, Agreements, and Mitigation Measures Assumed as Part of the Project with Mitigation Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains	Rail Yard Equipment
PART 1. Regulations and Agreements					
Vessel Speed Reduction Program – 68 percent historical compliance in 2005 (assumed to remain at this level until **MM AQ-10** takes effect in 2009).	**California Diesel Fuel Regulations** – 500-ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. **Engine Standards for Marine Diesel Engines** – Tier 2 standards gradually phased in due to normal tugboat fleet turnover.	**Emission Standards for Nonroad Diesel Engines** – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal terminal equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006.	**Emission Standards for Onroad Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **AB 2650** – On-terminal trucks are subject to idling limits. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits	**Emission Standards for Locomotives** – Tier 0, 1, and 2 standards gradually phased in over all years due to normal locomotive fleet turnover. **2005 CARB/Railroad Statewide Agreement** – Reduced line haul locomotive idling times assumed to take effect starting in 2006. **Switch Locomotive Modernization Agreement** – Tier 2 switch locomotive starting in 2008. This supersedes the Emission Standards for Locomotives (above). Applies only to the Berth 121-131 rail yard switch locomotive. **Nonroad Diesel Fuel Rule** – 500-ppm sulfur starting June 1, 2007, and 15-ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. **California Diesel Fuel Regulations** – 15-ppm sulfur starting January 1, 2007. Applies to all switch locomotives.	**Emission Standards for Nonroad Diesel Engines** – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal rail yard equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **Emulsified Fuels and Oxidation Catalysts** – This agreement applies to all toppicks at the Berth 121-131 rail yard starting in 2005.
PART 2. Mitigation Measures					
MM AQ-9: Alternative Maritime Power (AMP) – 60 percent compliance 1/1/05 – 6/30/05; 70 percent compliance starting 7/1/05; 90 percent compliance starting 1/1/10; and 100% of ship calls starting January 1, 2011. **MM AQ-10: Expanded VSR Program** – 100 percent compliance starting 1/1/09. **MM AQ-11: Low Sulfur Fuel** – Phase-in of low sulfur fuels in auxiliary engines, main engines, and boilers, starting 2009 and reaching 100 percent use of MGO with 0.2% sulfur by 2013. **MM AQ-12: Slide Valves on Ship Main Engines** – phase-in of ships with slide valves on main engines starting 2009 and reaching 100 percent by 2014.		**MM AQ-15: Alternative Fuel Yard Tractors** – Use of LPG beginning September 30, 2004 until December 31, 2014; beginning in January 1, 2015, all new yard tractors shall be the cleanest available NO_X alternative-fueled engine meeting 0.015 Gm/hp-Hr for PM. **MM AQ-17: Yard Equipment (Terminal)** – Starting in 9/30/04 – use of emulsified fuels and diesel oxidation catalysts for all toppicks and sidepicks	**MMs AQ-19 and 20: Clean Truck Program** – Phase-in of trucks meeting EPA 2007 emission standards starting in 2009 and reaching 100 percent by 2012. **LNG Trucks** Phase-in of LNG trucks starting in 2012 and reaching 100 percent by 2018.	**MM AQ-18: Yard Locomotives at Berth 121-131 Rail Yard** – Requires diesel particulate filters on yard locomotives at the on-dock rail yard by 2015.	**MM AQ-16: Yard Tractors (Rail Yard)** – Applies to Berth 121-131 rail yard equipment handling Berth 97-109 containers. Beginning in January 1, 2009, all new yard tractors operated at the Berth 121-131 terminal rail yard that handle containers moving through the Berth 97-109 terminal shall be the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM. By the end of 2012, all equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards.

Table 3.2-27. Regulations, Agreements, and Mitigation Measures Assumed as Part of the Project with Mitigation Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains	Rail Yard Equipment
		Starting in 1/1/09 – all RTGs are electric; all toppicks have cleanest available NO_X alternative-fueled engines meeting 0.015 gm/hp-hr for PM; application of cleanest available NO_X fuels and engines meeting 0.015 gm/hp-hr for PM for all other equipment except yard tractors, RTGs, and toppicks By the end of 2012, all terminal equipment less than 750 hp except yard tractors, RTGs, and toppicks shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards By the end of 2014, application of Tier 4 non-road engine standards to all terminal equipment except yard tractors, RTGs, and toppicks			By the end of 2014, all equipment shall meet USEPA Tier 4 non-road engine standards.
PART 3. Mitigation Measures Not Included in the Emission Calculations[b]					
MM AQ-13: Reroute Cleaner Ships **MM AQ-14: New Vessel Builds** **MM AQ-22: Periodic Review of New Technology and Regulations** – potentially applies to all source types. **MM AQ-23: Throughput Tracking** – potentially applies to all source types. **MM AQ-24: General Mitigation Measure** – potentially applies to all source types.			**MM AQ-21: Truck Idling Reduction Measure**		

Notes:

a) Regional power plant emissions from AMP generation were calculated using emission factors provided by the SCAQMD. These factors were assumed constant for all Project study years and, therefore, do not assume any future changes in applicable regulations.

b) These mitigation measures were not included in the calculations because their effectiveness has not been established.

The following mitigation measures would reduce criteria pollutant emissions associated with proposed Project operations. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5. Phase-in schedules for all mitigation measures assume the lease to China Shipping is reconsidered and signed by both the Port and the tenant prior to January 1, 2008. Delays to the assumed lease schedule may shift phase-in schedules for applicable mitigation measures.

SHIPS

MM AQ-9: ***Alternative Maritime Power (AMP).*** **China Shipping ships calling at Berths 97-109 must use AMP at the following percentages while hoteling in the Port:**

- **January 1 to June 30, 2005: 60 percent of total ship calls (ASJ Requirement)**
- **July 1, 2005: 70 percent of total ship calls (ASJ Requirement)**
- **January 1, 2010: 90 percent of ship calls**
- **January 1, 2011, and thereafter: 100 percent of ship calls***

*While the terminal is expected to meet 100 percent AMP, certain events such as equipment failure may mean less than 100 percent of ships would comply with this measure in certain years (the Port expects compliance to be 97 to 98 percent in such cases). A compliance change of 2 to 3 percent would not affect significance findings in this analysis.

Additionally, by 2010, all ships retrofitted for AMP shall be required to use AMP while hoteling at a 100 percent compliance rate, with the exception of circumstances when an AMP-capable berth is unavailable due to utilization by another AMP-capable ship.

Use of AMP would enable ships to turn off their auxiliary engines during hoteling, leaving the boiler as the only source of direct emissions. An increase in regional power plant emissions associated with AMP electricity generation is also assumed. Including the emissions from ship boilers and regional power plants, a ship hoteling with AMP reduces its criteria pollutant emissions 71 to 93 percent, depending on the pollutant, compared to a ship hoteling without AMP and burning residual fuel in the boilers.

MM AQ-10: ***Vessel Speed Reduction Program.*** **All ships calling at Berths 97-109 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area in the following implementation schedule:**

- **2009 and thereafter: 100 percent**

Currently, the VSR program is a voluntary program. This mitigation measure requires China Shipping to participate in the VSR program at higher rates than it currently is achieving. The average cruise speed for a container vessel ranges from about 18 to 25 knots, depending on the size of a ship (larger ships generally cruise at higher speeds). For a ship with a 24-knot cruise speed, for example, a reduction in speed to 12 knots reduces the main engine load factor from 83 percent to 10 percent, due to the cubic relationship of load factor to speed. The corresponding reduction in overall container ship transit emissions (main engine, auxiliary engines, and boiler), from the SCAQMD overwater boundary to the berth, is approximately 19 percent for VOC, 37 percent for CO, 56 percent for NO_X, 58 percent for SO_X, and 53 percent for PM_{10}.

MM AQ-11: ***Low-Sulfur Fuel.*** **Ships calling at Berths 97-109 shall use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin (including hoteling for non-AMP ships) at the following annual participation rates:**

- **2009: 30 percent of auxiliary engines, main engines, and boilers**
- **2010: 50 percent of auxiliary engines, main engines, and boilers**
- **2013 and thereafter: 100 percent of auxiliary engines, main engines, and boilers**

The use of 0.2 percent sulfur fuel would reduce emissions of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ from ships by about 10 percent, 93 percent, 64 percent, and 64 percent, respectively, compared to 2.7 percent sulfur residual fuel.

MM AQ-12: ***Slide Valves.*** **Ships calling at Berths 97-109 shall be equipped with slide valves or equivalent on main engines in the following percentages:**

- **2009: 25 percent**
- **2010: 50 percent**
- **2012: 75 percent**
- **2014 and thereafter: 100 percent**

Slide valves would reduce emissions of NO_X, PM_{10}, and $PM_{2.5}$ from ship main engines by about 30 percent, 25 percent, and 25 percent, respectively, compared to a conventional engine (Starcrest, 2007).

MM AQ-13: ***Reroute Cleaner Ships.*** **When scheduling vessels for service to the Port of Los Angeles, Tenant shall ensure that 75 percent of all ship calls to the Berth 97-109 terminal meet IMO MARPOL Annex VI NO_X emissions limits for Category 3 engines.**

An Annex VI compliant ship would reduce NO_X emissions by 6 percent relative to current in-use ships.

MM AQ-14: ***New Vessel Builds.*** **The purchaser shall confer with the ship designer and engine manufacture to determine the feasibility of incorporating all emission reduction technology and/or design options and when ordering new ships bound for the Port of Los Angeles. Such technology shall be designed to reduce**

criteria pollutant emissions (NO_X, SO_X and PM) and GHG emission (CO, CH_4, O_3, and CFCs). Design considerations and technology shall include, but are not limited to:

1. **Selective Catalytic Reduction Technology**
2. **Exhaust Gas Recirculation**
3. **In-line fuel emulsification technology**
4. **Diesel Particulate Filters (DPFs) or exhaust scrubbers**
5. **Common Rail**
6. **Low NO_X Burners for Boilers**
7. **Implement fuel economy standards by vessel class and engine**
8. **Diesel-electric pod propulsion systems**

This measure focuses on reducing DPM, NO_X, and GHG emissions from main engines and auxiliary engines. OGV engine standards have not kept pace with other engine standards such as trucks and terminal equipment. New vessels destined for California service should be built with these technologies. As new orders for ships are placed, the Port believes it is essential that the following elements be incorporated into future vessel design and construction:

1. Work with engine manufacturers to incorporate all emissions reduction technologies/options when ordering main and auxiliary engines, such as slide valves, common rail, and exhaust gas recirculation.
2. Design in extra fuel storage tanks and appropriate piping to run both main and auxiliary engines on a separate/cleaner fuel.
3. Incorporate selective catalytic reduction (SCR) or an equally effective combination of engine controls. If SCR systems are not commercially available at the time of engine construction, design in space and access for main and auxiliary engines to facilitate installation of SCR or other retrofit devices at a future date.

YARD EQUIPMENT

MM AQ-15: ***Yard Tractors at Berth 97-109 Terminal***

All yard tractors operated at the Berth 97-109 terminal shall run on alternative fuel (LPG) beginning September 30, 2004, until December 31, 2014 *(ASJ Requirement)*.

Beginning in January 1, 2015, all yard tractors operated at the Berth 97-109 terminal shall be the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM.

This mitigation measure is primarily aimed at reducing health risks by eliminating DPM emissions. From a criteria pollutant emissions standpoint, this measure would generally increase emissions of all criteria pollutants except SO_X prior to 2015, compared to diesel yard tractors. The increase in emissions is due to the aging LPG yard tractor fleet coupled with the phase-in of much more stringent engine standards for diesel engines. As a result, this mitigation measure would increase VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions from approximately 2009-2014.

In 2015, this measure would require the alternative-fueled yard tractors to meet the equivalent of the Tier 4 diesel engine standards. This study assumes that this requirement would be met by replacing the LPG yard tractors with LNG yard tractors meeting the equivalent of the Tier 4 diesel engine standards (although LNG is not explicitly required by this measure). As a result, beginning in 2015, this measure would continue to provide a health risk benefit by eliminating DPM emissions, and the criteria pollutant emissions would be similar to diesel yard tractors for all pollutants.

MM AQ-16: ***Yard Equipment at Berth 121-131 Rail Yard.*** **All diesel-powered equipment operated at the Berth 121-131 terminal rail yard that handles containers moving through the Berth 97-109 terminal shall implement the following measures:**

- **Beginning January 1, 2009, all equipment purchases shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.0150 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDECS.**
- **By the end of 2012, all equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards.**
- **By the end of 2014, all equipment shall meet USEPA Tier 4 non-road engine standards.**

This measure would provide a health risk benefit if some of the equipment purchased in accordance with this measure were alternative fueled. However, this study conservatively assumed that all equipment purchased in accordance with this measure would be diesel-fueled. For rail yard tractors and toppicks, this measure is predicted by OFFROAD2007 to have an effect similar to the CARB Regulation for Mobile Cargo-Handling Equipment (CHE) at Ports and Intermodal Rail Yards (discussed in Section 3.2.3.2 and assumed for the unmitigated Project), with some additional reductions for toppicks from 2013 to 2015.

MM AQ-17: ***Yard Equipment at Berth 97-109 Terminal.***

- **September 30, 2004: All diesel-powered toppicks and sidepicks operated at the Berth 97-109 terminal shall run on emulsified diesel fuel plus a DOC *(ASJ Requirement).***

- **January 1, 2009:**
  - **All RTGs shall be electric.**
  - **All toppicks shall have the cleanest available NO_X alternative fueled engines meeting 0.015 gm/hp-hr for PM.**
  - **All equipment purchases other than yard tractors, RTGs, and toppicks shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC.**
- **By the end of 2012: all terminal equipment less than 750 hp other than yard tractors, RTGs, and toppicks shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards.**
- **By the end of 2014: all terminal equipment other than yard tractors, RTGs, and toppicks shall meet USEPA Tier 4 non-road engine standards.**

This study assumed that, in response to this measure, DOCs plus emulsified fuel would be used on toppicks and sidepicks through 2006. However, starting in 2007, only DOCs were assumed because of an unanticipated shortage in emulsified fuel at the Port due to a lack of suppliers. For toppicks and sidepicks, the use of emulsified diesel fuel plus a DOC is verified by CARB as a Level 2 control strategy, which means that NO_X and PM_{10} emissions would be reduced by at least 20 and 50 percent, respectively, compared to conventional diesel fuel. This measure would also reduce emissions of VOC and CO by at least 40 percent, according to additional CARB documentation (CARB, 2000). SO_X emissions would not be affected.

Starting in 2009, this measure would eliminate onsite criteria pollutant emissions from RTGs by converting them to electric.

This measure would provide an additional health risk benefit in 2009 by converting toppicks to alternative fuel, which eliminates emissions of DPM. The effect on criteria pollutant emissions is less pronounced, with some pollutants increasing and others decreasing, depending on the year and the pollutant.

For other types of terminal equipment, this measure would provide a health risk benefit if some of the equipment purchased in accordance with this measure were alternative fueled. However, this study conservatively assumed that all equipment purchased in accordance with this measure would be diesel fueled. For diesel-fueled equipment, this measure would provide a short-term reduction in criteria pollutant emissions (roughly until 2015, although it varies by equipment type) compared to unmitigated emissions. For example, in 2015, OFFROAD2007 predicts an effectiveness of 70 percent for

VOC, 52 percent for CO, 90 percent for NO_X, and 95 percent for PM_{10} and $PM_{2.5}$, compared to unmitigated emissions. Eventually, however, the CARB Regulation for Mobile Cargo-Handling Equipment (CHE) at Ports and Intermodal Rail Yards (discussed in Section 3.2.3.2) would cause the unmitigated fleet to "catch up" to the mitigated fleet, at which point there would be no substantial difference in emissions.

MM AQ-18: ***Yard Locomotives at Berth 121-131 Rail Yard.* Beginning January 1, 2015, all yard locomotives at the Berth 121-131 Rail Yard that handle containers moving through the Berth 97-109 terminal shall be equipped with a diesel particulate filter (DPF).**

This measure would reduce yard locomotive emissions of PM_{10} and $PM_{2.5}$ by 85 percent (pers. comm., Agrawal, 2008).

TRUCKS

MM AQ-19: ***Clean Truck Program*. The tenant shall comply with the Port's Clean Truck Program. Based on participation in the Clean Truck Program, Heavy-duty diesel trucks entering the Berth 97-109 terminal shall meet the USEPA 2007 emission standards for on-road heavy-duty diesel engines (USEPA, 2001) in the following percentages:**

- **2009: 50 percent USEPA 2007**
- **2010: 70 percent USEPA 2007**
- **2011: 90 percent USEPA 2007**
- **2012: 100 percent USEPA 2007**

This measure will be implemented through the Port's Clean Truck Program. The effectiveness of this measure was determined by using the EMFAC2007 emission factor model. The truck fleet mix for the Port was adjusted in the EMFAC2007 model to account for the required percentages of 2007-compliant trucks. The emission reductions varied depending on the pollutant, year, and vehicle speed. For example, in 2015 (3 years after full implementation of this measure), the emission reductions for trucks traveling at 25 mph would be 49 percent for VOC, 0 percent for CO, 57 percent for NO_X, 43 percent for SO_X, and 32 percent for PM_{10}.

MM AQ-20: ***LNG Trucks.* Heavy-duty trucks entering the Berth 97-109 terminal shall be LNG fueled in the following percentages.**

- **50 percent in 2012 and 2013**
- **70 percent in 2014 through 2017**
- **100 percent in 2018 and thereafter**

This measure would provide an additional health-risk benefit by converting diesel trucks to alternative fuel, which eliminates emissions of DPM. There would still be a small amount of DPM emissions because approximately 5 percent of the fuel would continue to be diesel to initiate the combustion process. Compared to the clean diesel trucks required under the first part of this measure, LNG trucks would provide temporary reductions in criteria pollutant emissions. For example, in 2015, the emission reductions would be approximately 11 percent for VOC, 36 percent for CO, 27 percent for NO_X, and no change for PM_{10}. SO_X emissions would be virtually eliminated. By 2030, however, clean diesel trucks would produce comparable, and in some cases, lower criteria pollutant emissions than LNG trucks.

MM AQ-21: ***Truck Idling Reduction Measure.*** **The Berth 97-109 terminal operator shall ensure that truck idling is reduced at the terminal. Potential methods to reduce idling include, but are not limited to, the following: (1) operator shall maximize the durations when the main gates are left open, including during off-peak hours, (2) operator shall implement a container tracking and appointment-based truck delivery and pick-up system to minimize truck queuing, and (3) operator shall design gate to exceed truck flow capacity to ensure queuing is minimized.**

This measure could potentially reduce on-terminal truck idling emissions. Because the effectiveness of this measure has not been established, this measure is not quantified in this study.

NEW/ALTERNATIVE TECHNOLOGY

The following measures are lease measures that would be included in the lease for Berth 97-109 due to projected future emissions levels associated with the proposed Project. The measures do not meet all of the criteria for CEQA or NEPA mitigation measures but are considered important lease measures to reduce future emissions. This lease obligation is distinct from the requirement of further CEQA or NEPA mitigation measures to address impacts of potential subsequent discretionary Project approvals.

MM AQ-22: ***Periodic Review of New Technology and Regulations.*** **The Port shall require the Berth 97-109 tenant to review, in terms of feasibility, any Port-identified or other new emissions-reduction technology, and report to the Port. Such technology feasibility reviews shall take place at the time of the Port's consideration of any lease amendment or facility modification for the Berth 97-109 property. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, the tenant shall work with the Port to implement such technology.**

Potential technologies that may further reduce emission and/or result in cost-savings benefits for the tenant may be identified through future work on the CAAP. Over the course of the lease, the tenant and the Port shall work together to identify potential new technology. Such technology shall be studied for feasibility, in terms of cost, technical and operational feasibility.

As partial consideration for the Port agreement to issue the permit to the tenant, the tenant shall implement not less frequently than once every 7 years following the effective date of

the permit, new air quality technological advancements, subject to mutual agreement on operational feasibility and cost sharing, which shall not be unreasonably withheld.

The effectiveness of this measure depends on the advancement of new technologies and the outcome of future feasibility or pilot studies. As discussed in Section 3.2.4.1, if the tenant requests future Project changes that would require environmental clearance and a lease amendment, future CAAP mitigation measures would be incorporated into the new lease at that time.

MM AQ-23: ***Throughput Tracking.*** **If the Project exceeds project throughput assumptions/projections anticipated through the years 2010, 2015, 2030, or 2045, staff shall evaluate the effects of this on the emissions sources (ship calls, locomotive activity, backland development, and truck calls) relative to the EIS/EIR. If it is determined that these emissions sources exceed EIS/EIR assumptions, staff would evaluate actual air emissions for comparison with the EIS/EIR and if the criteria pollutant emissions exceed those in the EIS/EIR, then new or additional mitigations would be applied through MM AQ-22.**

MM AQ-24: ***General Mitigation Measure.*** **For any of the above mitigation measures (MM AQ-9 through AQ-21), if any kind of technology becomes available and is shown to be as good or as better in terms of emissions reduction performance than the existing measure, the technology could replace the existing measure pending approval by the Port of Los Angeles. The technology's emissions reductions must be verifiable through USEPA, CARB, or other reputable certification and/or demonstration studies to the Port's satisfaction.**

Residual Impacts

Table 3.2-28 presents the mitigated average daily criteria pollutant emissions associated with operation of the proposed Project, after the application of **MM AQ-9** through **MM AQ-24**. As discussed above, the effects of **MM AQ-13**, **MM AQ-14**, and **MM AQ-21** were not included in the emission calculations because their effectiveness has not been established. **MM AQ-22** through **MM AQ-24** are lease measures that may reduce future emissions; however, because implementation may change over the life of the leases, these measures were not included in emissions calculations.

As shown in Table 3.2-28, implementation of **MM AQ-9** through **MM AQ-24** would reduce average daily emissions of all criteria pollutants relative to unmitigated Project emissions except for VOC and CO in 2005. This increase in VOC and CO emissions in 2005 is a result of replacing diesel yard tractors with LPG yard tractors in accordance with **MM AQ-15**. Depending on the pollutant, the mitigation effectiveness of all other pollutants would range from 15 to 26 percent in 2005, 32 to 96 percent in 2015, and 5 to 96 percent in 2030 and 2045.

Table 3.2-28. Average Daily Operational Emissions With Mitigation – Proposed Project

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	PM_{25}
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	7	20	243	270	24	19
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	183	2,701	1,074	4	20	19
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**451**	**3,859**	**4,292**	**735**	**266**	**197**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	391	3,633	3,726	724	235	168
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	268	1,158	3,218	731	247	178
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	91	180	1,172	69	40	32
Ships – Hoteling	2	11	76	28	7	6
Tugboats	1	10	56	0	2	2
Trucks	105	359	903	1	160	44
Trains	52	181	932	1	28	26
Rail Yard Equipment	2	120	59	0	2	2
Terminal Equipment	11	1,522	108	2	5	5
Worker Trips	7	88	12	0	24	5
Total – Project Year 2015	**272**	**2,471**	**3,317**	**102**	**267**	**121**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	212	2,245	2,751	92	236	92
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	264	1,619	3,245	102	265	118

Table 3.2-28. Average Daily Operational Emissions With Mitigation – Proposed Project

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	PM_{25}
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	125	247	1,595	93	55	44
Ships – Hoteling	3	12	86	32	8	7
Tugboats	2	13	54	0	2	2
Trucks	195	580	1,707	0	226	75
Trains	52	226	951	1	25	23
Rail Yard Equipment	2	145	20	0	1	1
Terminal Equipment	15	2,110	150	3	7	7
Worker Trips	5	53	6	0	29	6
Total – Project Year 2030	**398**	**3,387**	**4,569**	**130**	**354**	**164**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	338	3,161	4,003	119	322	135
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	390	2,497	4,492	130	351	161
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	125	247	1,595	93	55	44
Ships – Hoteling	3	12	86	32	8	7
Tugboats	2	13	54	0	2	2
Trucks	195	580	1,707	0	226	75
Trains	46	226	882	1	21	20
Rail Yard Equipment	2	145	20	0	1	1
Terminal Equipment	15	2,059	148	3	7	7
Worker Trips	4	45	4	0	29	6
Total – Project Year 2045	**391**	**3,326**	**4,496**	**130**	**349**	**160**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	331	3,101	3,930	119	318	131
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Table 3.2-28. Average Daily Operational Emissions With Mitigation – Proposed Project

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	PM_{25}
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	383	2,458	4,420	130	347	157
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation.

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative-fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-29 presents the mitigated peak-daily criteria pollutant emissions associated with operation of the proposed Project, after the application of **MM AQ-9** through **MM AQ-24**. In most cases, the mitigation effectiveness of these measures on peak daily emissions is similar to that of average daily emissions.

Table 3.2-30 shows the combined total of peak daily construction and operational emissions for year 2010, after the application of **MM AQ-9** through **MM AQ-24**.

Table 3.2-29. Peak Daily Operational Emissions With Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	450	6,644	2,642	10	48	46
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**1,016**	**8,714**	**11,734**	**5,629**	**896**	**706**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	855	8,107	10,211	5,601	812	628
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-29. Peak Daily Operational Emissions With Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	524	1,445	8,843	5,619	844	656
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	207	400	2,439	135	87	69
Ships – Hoteling	5	23	163	60	15	13
Tugboats	3	21	112	0	4	4
Trucks	140	480	1,207	2	213	59
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	3	135	69	0	2	2
Terminal Equipment	27	3,877	275	6	12	12
Worker Trips	9	107	14	0	29	6
Total – Project Year 2015	**470**	**5,312**	**5,663**	**204**	**404**	**202**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	309	4,706	4,140	176	320	125
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	450	3,021	5,470	204	397	196
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	215	415	2,510	138	90	72
Ships – Hoteling	5	23	163	60	15	13
Tugboats	3	21	84	0	4	3
Trucks	239	710	2,089	0	277	91
Trains	123	539	2,265	2	60	55
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	35	4,890	347	7	16	16
Worker Trips	6	65	7	0	35	7
Total – Project Year 2030	**629**	**6,921**	**7,501**	**209**	**499**	**259**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	467	6,314	5,978	180	414	181

Table 3.2-29. Peak Daily Operational Emissions With Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	606	4,528	7,296	208	491	251
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	215	415	2,510	138	90	72
Ships – Hoteling	5	23	163	60	15	13
Tugboats	3	21	84	0	4	3
Trucks	239	710	2,089	0	277	91
Trains	110	539	2,100	2	51	47
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	34	4,770	342	7	15	15
Worker Trips	5	55	5	0	35	7
Total – Project Year 2045	**614**	**6,790**	**7,330**	**209**	**489**	**249**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	453	6,184	5,807	180	404	171
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	592	4,454	7,127	208	481	242
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation.

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative-fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-30. Peak Daily 2010 Construction and Operational Emissions – Proposed Project with Mitigation

	Peak Daily Emissions (lb/day)					
Project Year 2010	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Phase II						
Construct Berth 102	11	39	–	–	–	–
Construct Berth 100-109 Buildings	5	22	–	–	–	–
Construct 18 of 45-acre Backlands	11	51	–	–	–	–
Crane Delivery and Installation	36	97	–	–	–	–
Worker Trips	2	27	–	–	–	–
Phase III						
South Extension of Berth 100	–	–	303	0	16	15
Construct 25-acre Backlands (Behind Berth 100)	–	–	109	0	29	8
Crane Delivery and Installation	–	–	1,039	1,208	125	101
Worker Trips	–	–	3	0	5	1
Maximum Daily Emissions – Construction Phases 2 and 3 Combined [a]	**67**	**237**	**1,454**	**1,209**	**175**	**124**
Operation						
Ships – Transit and Anchoring	174	340	2,971	2,766	397	317
Ships – Hoteling	65	175	2,318	4,258	361	289
Tugboats	3	21	126	0	4	4
Trucks	247	1,101	2,500	4	201	94
Trains	84	269	1,481	31	48	45
Rail Yard Equipment	4	134	115	0	3	3
Terminal Equipment	1,456	27,456	5,180	5	78	77
Worker Trips	9	109	14	0	20	4
Maximum Daily Emissions – Operation	**2,042**	**29,606**	**14,705**	**7,065**	**1,111**	**831**
Total – Construction & Operation – Project Year 2010	**2,109**	**29,843**	**16,159**	**8,274**	**1,286**	**955**
CEQA Baseline Emissions [b]	161	607	1,523	28	85	78
CEQA Impact [c]	**1,948**	**29,236**	**14,636**	**8,246**	**1,201**	**877**
NEPA Baseline Emissions [d]	894	16,187	3,532	1.3	95	66
NEPA Impact [c]	**1,215**	**13,656**	**12,627**	**8,273**	**1,191**	**889**
Thresholds [e]	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

[a] Maximum emissions from Phases II and III combined assume simultaneous occurrence of construction of Berth 102, Berth 100-109 Buildings, 18 of the 45-acre backlands, and crane delivery for VOC and CO, and simultaneous occurrence of construction of Berth 100, construction of 25-acre backlands, and crane delivery for NO_X, PM_{10}, and $PM_{2.5}$.

[b] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[c] The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

[d] NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

[e] The SCAQMD operational thresholds are used in the significance determinations.

From a CEQA perspective, proposed Project peak daily emissions after mitigation would exceed CEQA baseline emissions for all criteria pollutants in all four proposed Project study years. These increases would exceed the SCAQMD daily emission thresholds and the 10 tons per year VOC threshold for all pollutants in all four proposed Project study years. Therefore, from a CEQA perspective, the mitigated air quality impacts associated with proposed Project operations would be significant for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2005, 2015, 2030, and 2045.

The year 2010 was chosen as the year that best represents a time when construction and operation activities would overlap. During this year, the increase in emissions relative to the CEQA baseline would be significant for all criteria pollutants.

From a NEPA perspective, proposed Project peak daily emissions after mitigation would exceed NEPA baseline emissions for all criteria pollutants in all four proposed Project study years. These increases would exceed the SCAQMD daily emission thresholds and the 10-ton per year VOC threshold for all pollutants in all four proposed Project study years. Therefore, from a NEPA perspective, the mitigated air quality impacts associated with proposed Project operations would be significant for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2005, 2015, 2030, and 2045.

The year 2010 was chosen as the year that best represents a time when construction and operation activities would overlap. During this year, the increase in emissions relative to the NEPA baseline would be significant for all criteria pollutants.

Although not quantified, implementation of **MM AQ-13**, **MM AQ-14**, **MM AQ-21**, and lease measures **MM AQ-22** through **MM AQ-24** could further reduce criteria pollutant emissions from marine vessels, trucks, locomotives, and terminal equipment. However, these measures are unlikely to reduce all of the remaining significant emissions to less than significant levels because of the magnitude of the emissions.

Figures 3.2-1, 3.2-2, and 3.2-3 plot the emission trends of NO_X, SO_X, and PM_{10}, respectively, for the proposed Project in relation to the CEQA baseline, both with and without mitigation. For comparison, Alternative 1 (No Project), the CEQA baseline, and the CEQA significance threshold (baseline plus the SCAQMD emission threshold) are shown in the figures.

Figures 3.2-4, 3.2-5, and 3.2-6 plot the emission trends of NO_X, SO_X, and PM_{10}, respectively, for the proposed Project in relation to NEPA baseline, both with and without mitigation. For comparison, Alternative 1 (No Project), the NEPA baseline, and the NEPA significance threshold (NEPA baseline plus the SCAQMD emission threshold) are shown in the figures.

Figures 3.2-7, 3.2-8, and 3.2-9 show the emissions of NO_X, SO_X, and PM_{10}, respectively, by source category for the proposed Project after mitigation. Because the emissions for ships, trucks, and trains are total emissions within the entire South Coast Air Basin, much of the emissions from these sources would occur away from the Port along the travel routes.

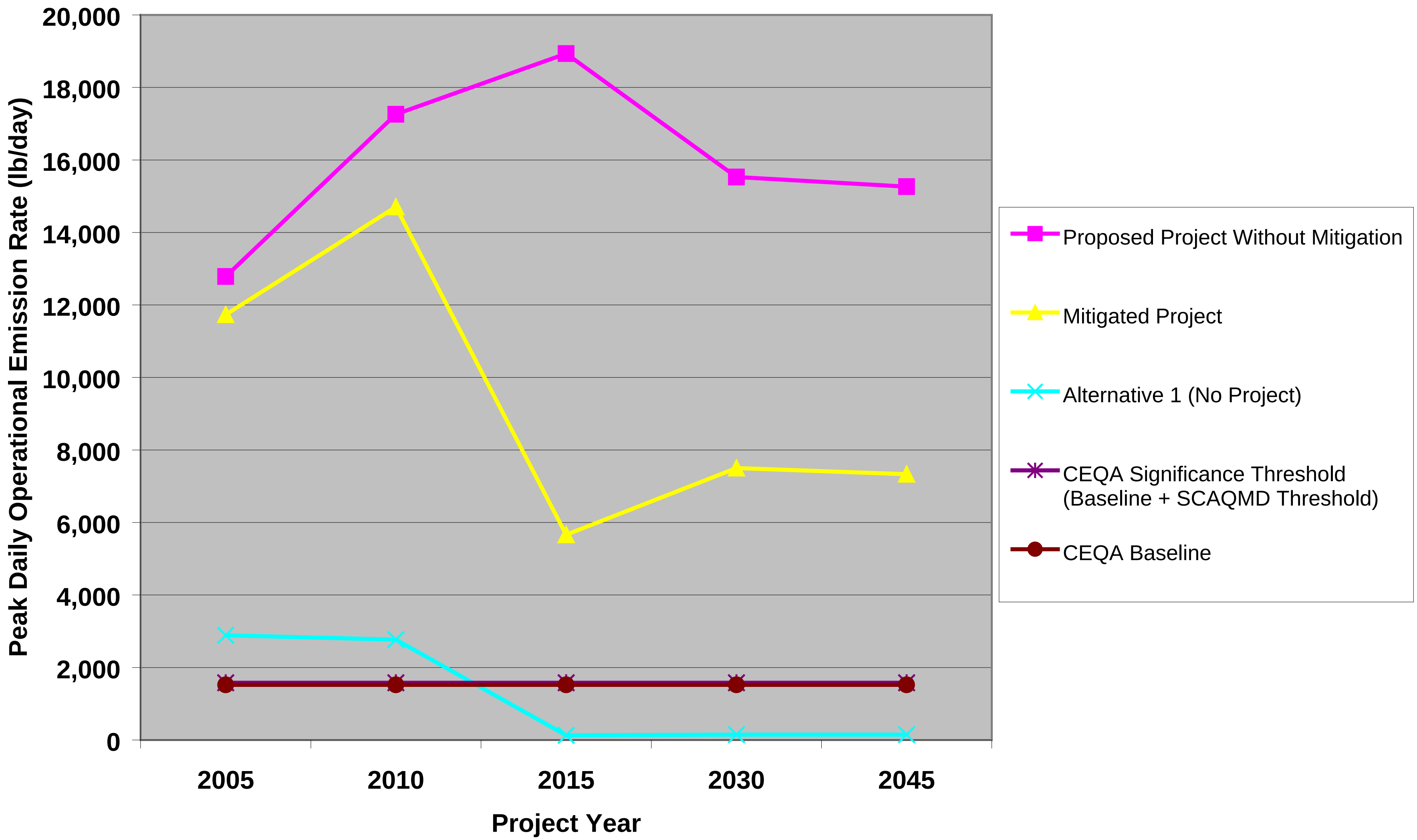


Figure 3.2-1
NO_X Emission Trends for the Proposed Project Relative to the CEQA Baseline
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq1 ai 11/07

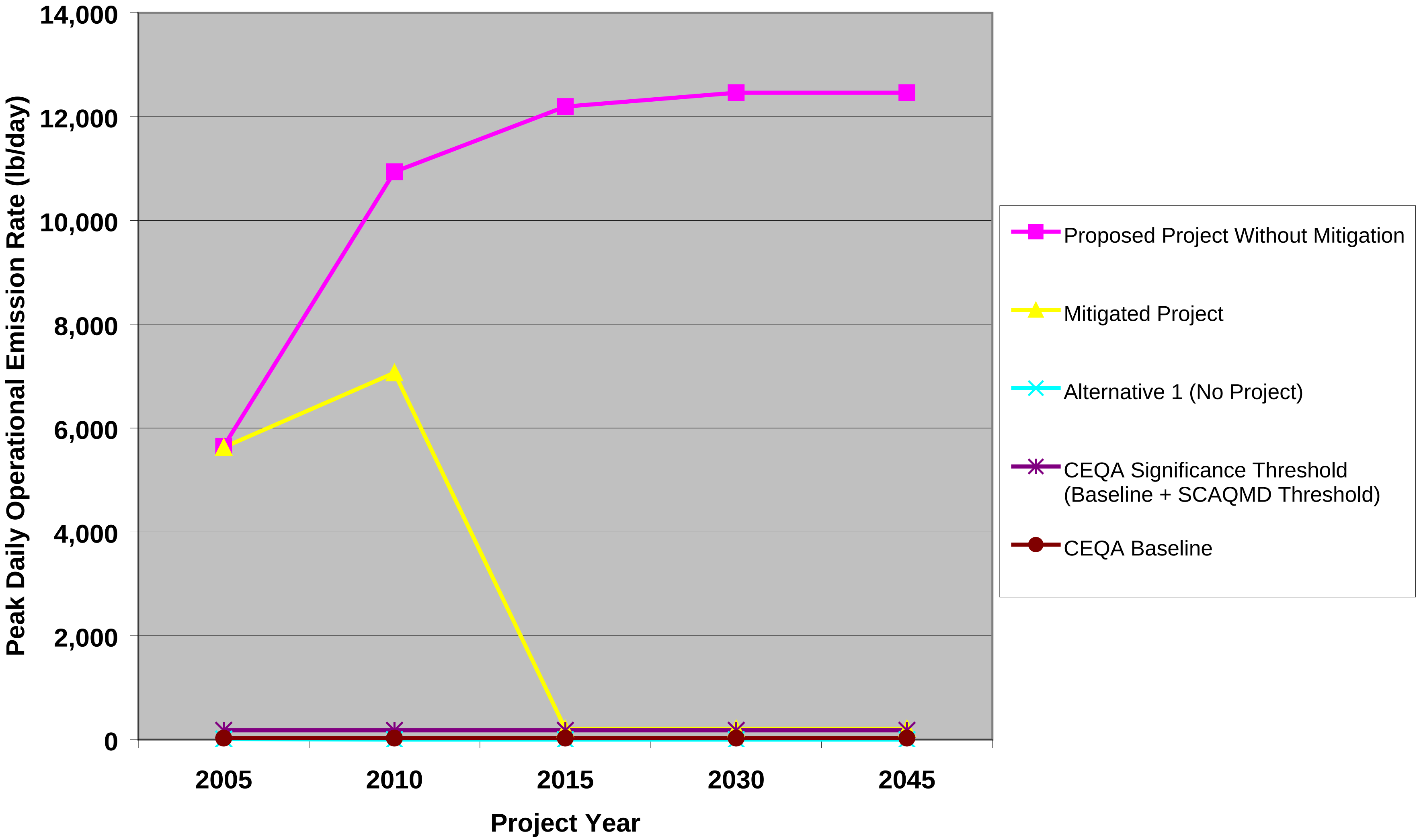


Figure 3.2-2
SO_X Emission Trends for the Proposed Project Relative to the CEQA Baseline
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq2 ai 11/07

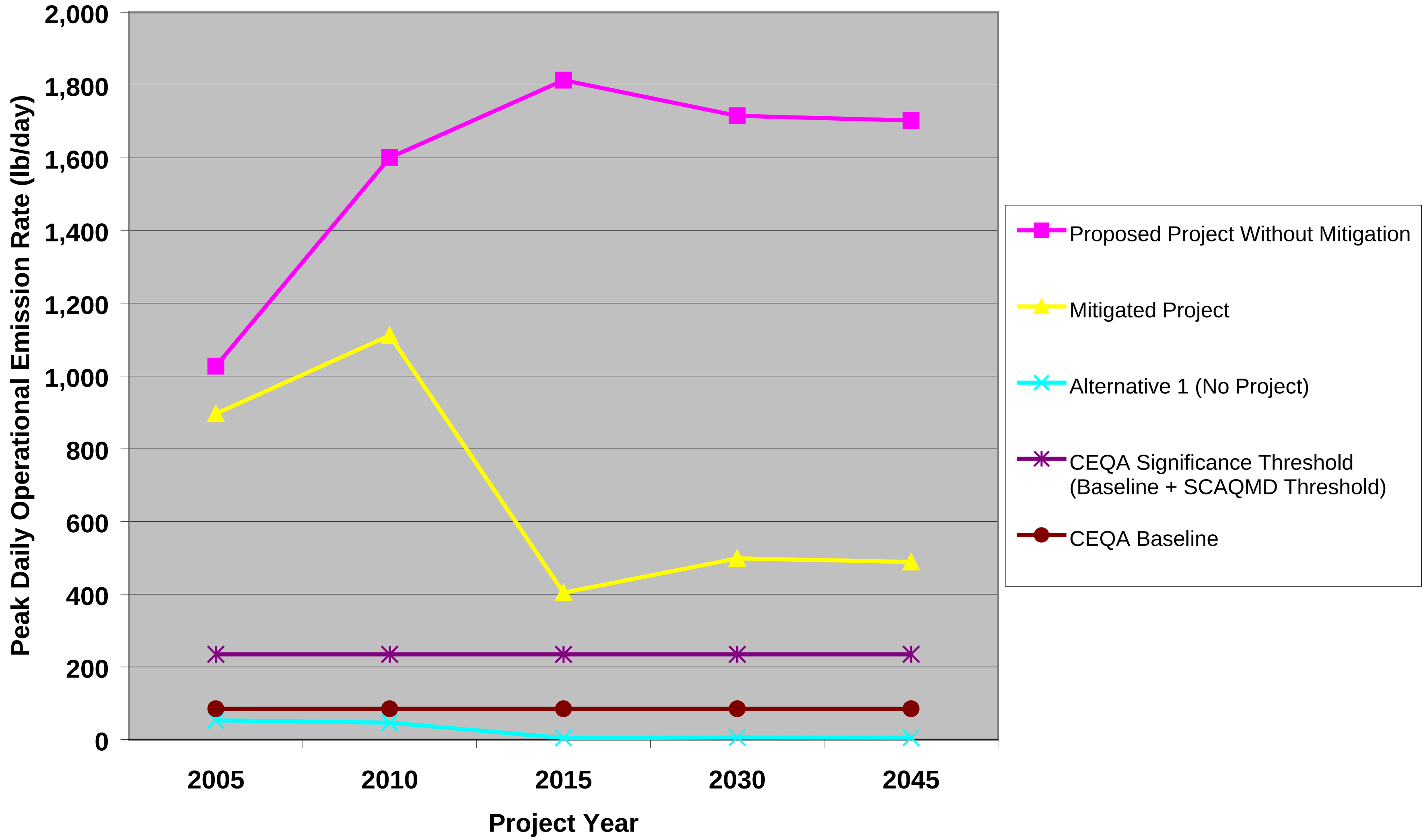


Figure 3.2-3
PM_{10} Emission Trends for the Proposed Project Relative to the CEQA Baseline
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq3 ai 11/07

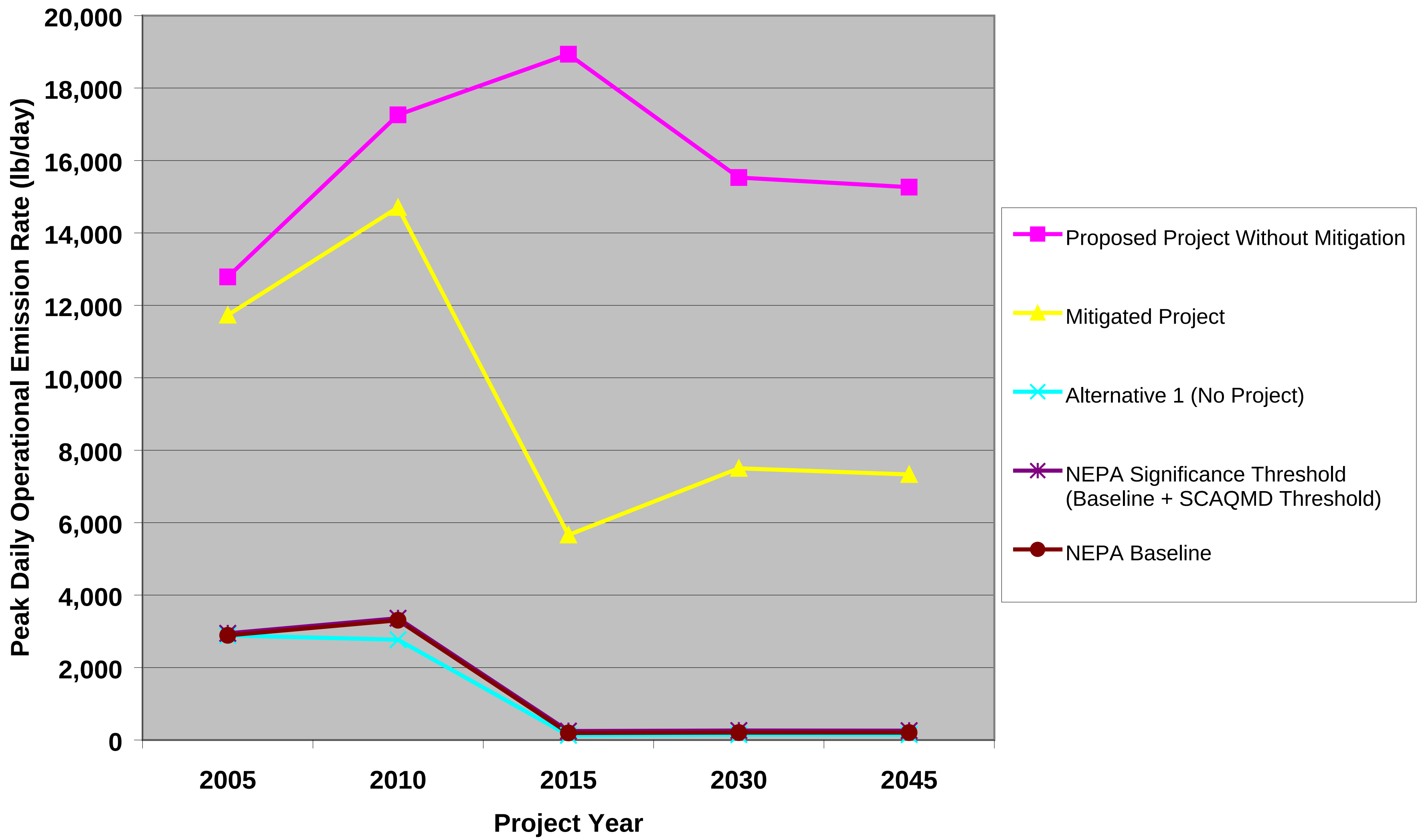


Figure 3.2-4
NO_X Emission Trends for the Proposed Project Relative to the NEPA Baseline
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

TB092007001SCO180121.01.04 CS_aq7 ai 11/07

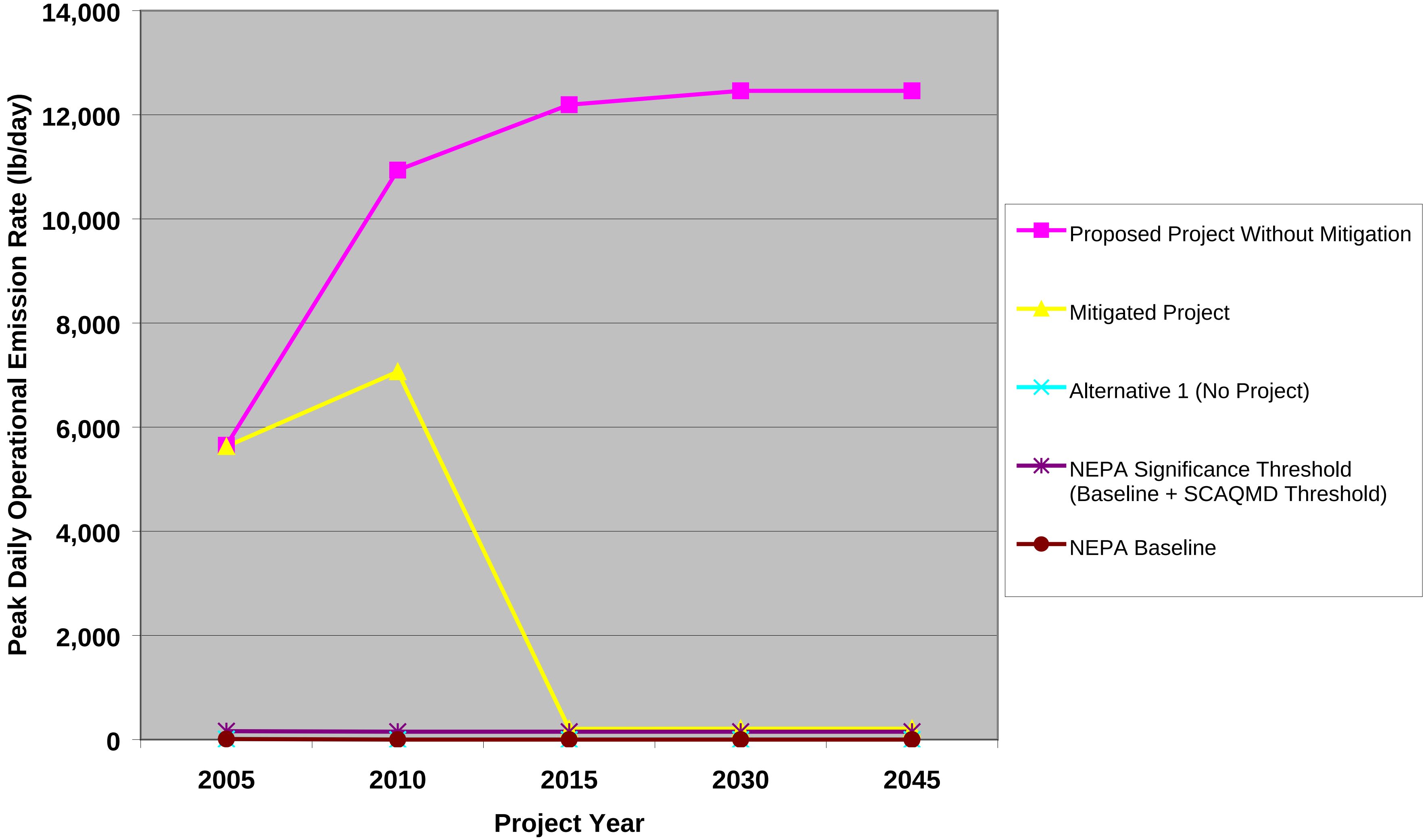


Figure 3.2-5
SO_X Emission Trends for the Proposed Project Relative to the NEPA Baseline
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq8 ai 11/07

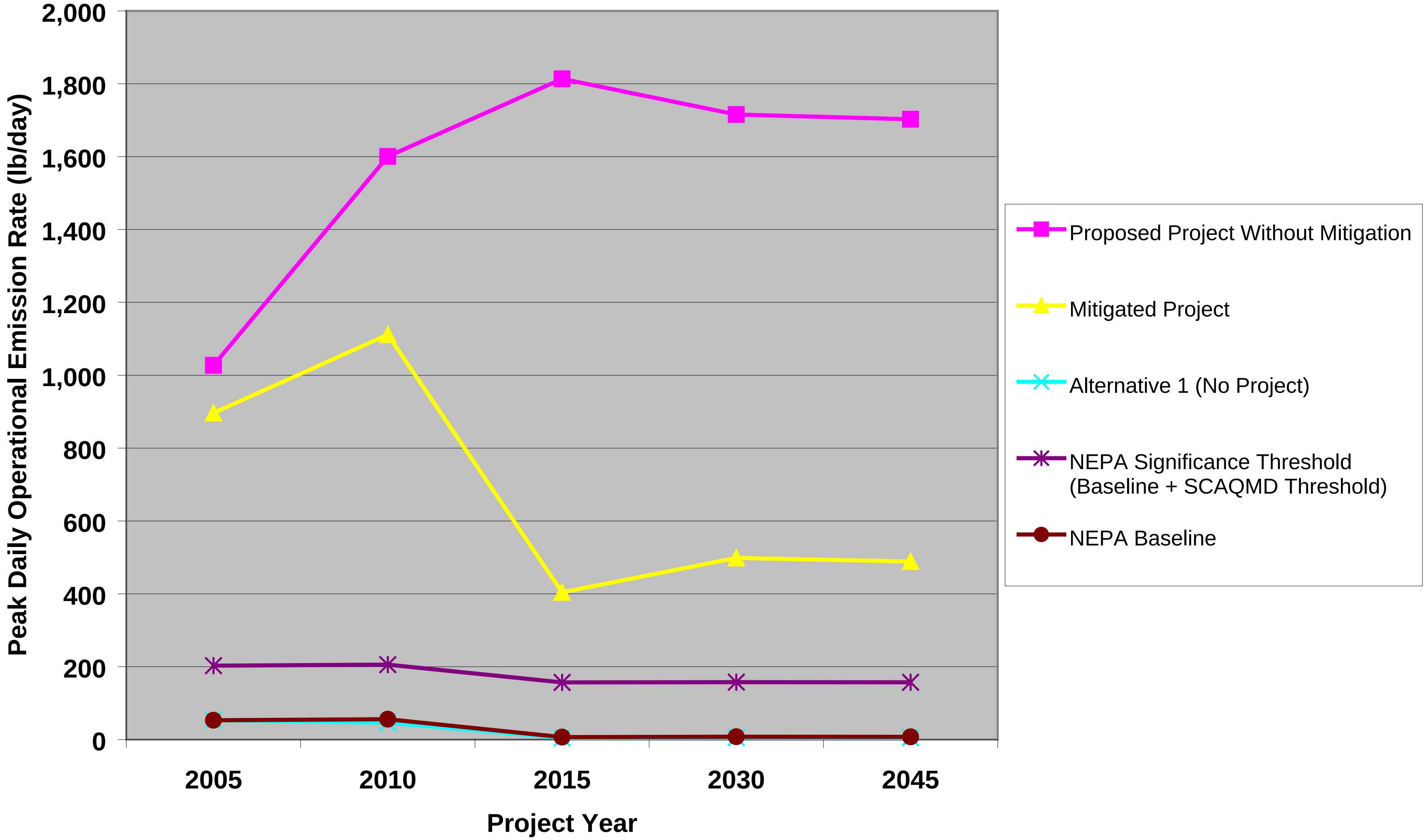
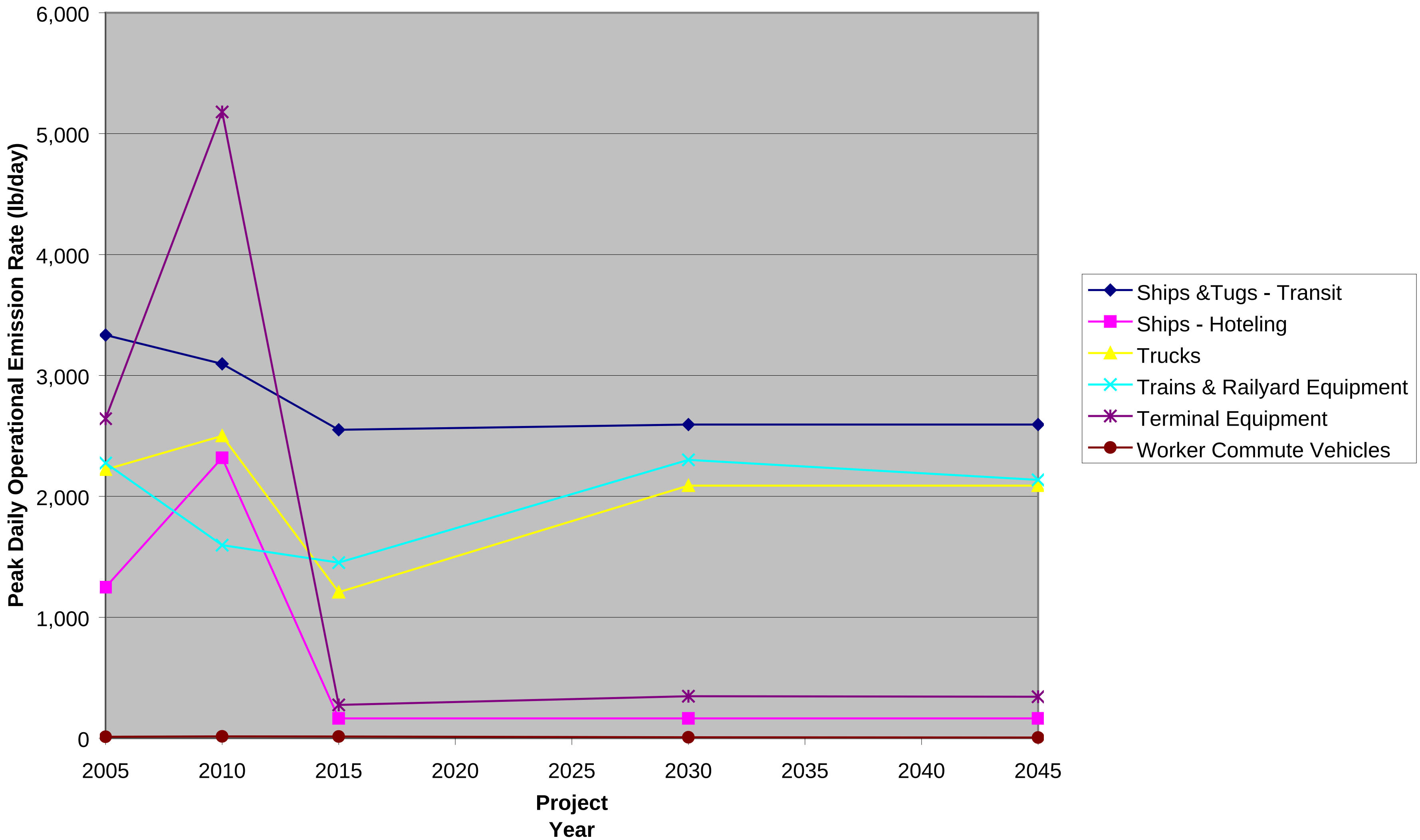


Figure 3.2-6
PM_{10} Emission Trends for the Proposed Project Relative to the NEPA Baseline
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq9 ai 11/07



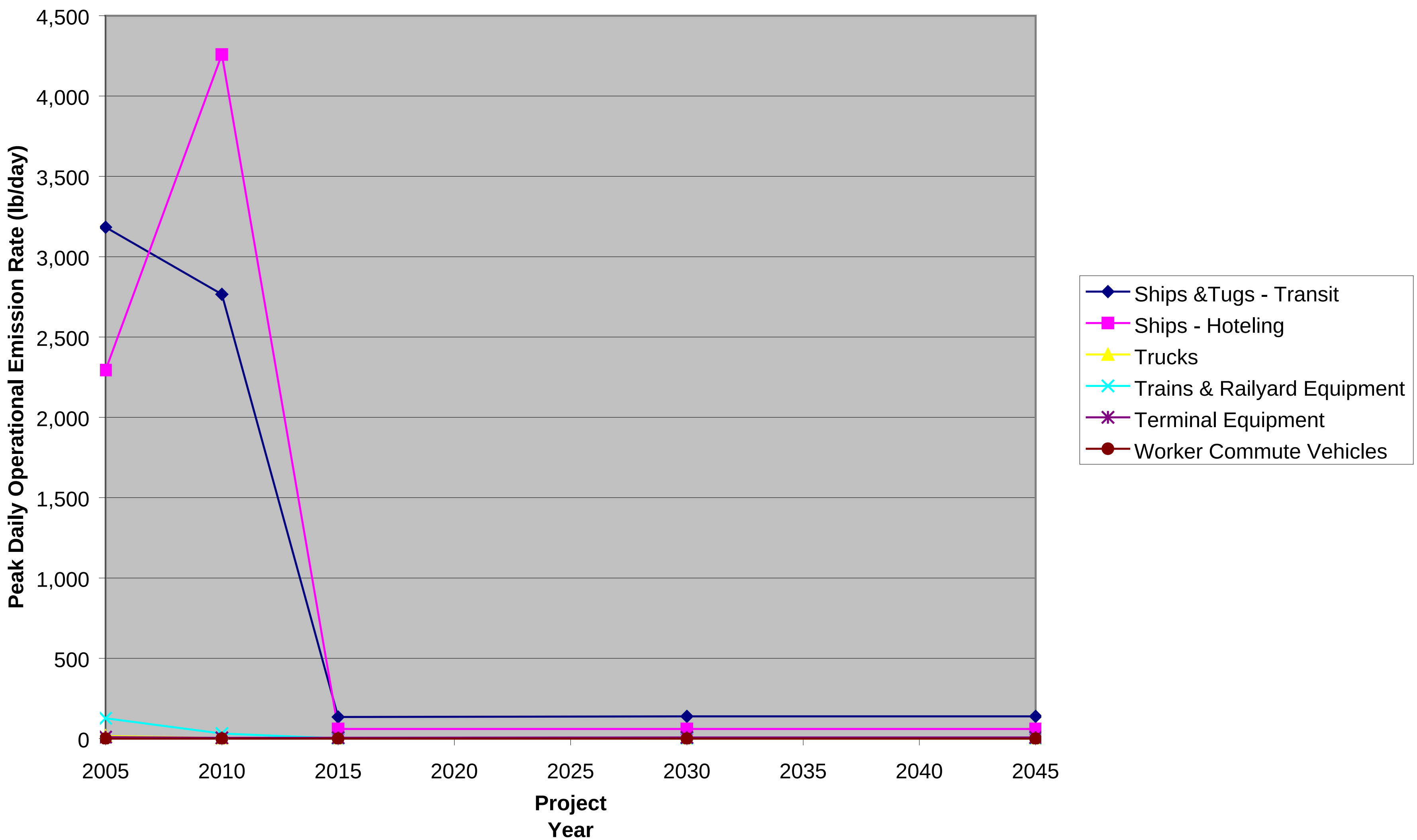
Note: Emissions from ships, trucks, and trains are within the entire South Coast Air Basin

Figure 3.2-7
NO_X Emissions by Source Category for the Mitigated Project
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq4 ai 11/07



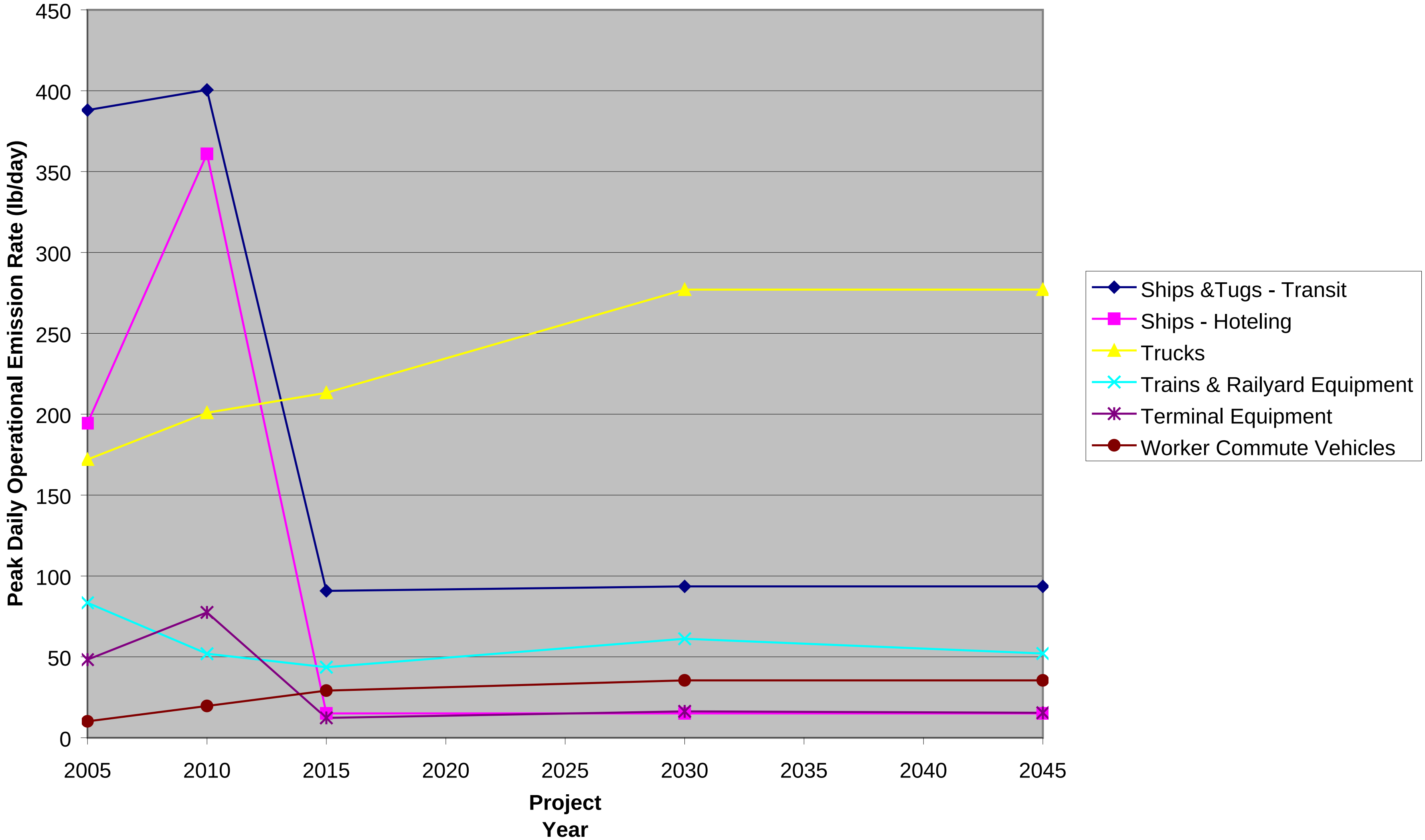
Note: Emissions from ships, trucks, and trains are within the entire South Coast Air Basin

Figure 3.2-8
SO_X Emissions by Source Category
for the Mitigated Project
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq5 ai 11/07



Note: Emissions from ships, trucks, and trains are within the entire South Coast Air Basin

Figure 3.2-9
PM_{10} Emissions by Source Category for the Mitigated Project
Berth 97-109
Container Terminal Project EIS/EIR

Source: Castle Environmental Consulting, LLC

CH2MHILL

TB092007001SCO180121.01.04 CS_aq6 ai 11/07

Proposed Project – Impact AQ-4: Proposed Project operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Dispersion modeling of onsite and offsite Project operational emissions was performed to assess the impact of the proposed Project on local ambient air concentrations. Construction emissions were added to the operational emissions in the model during the periods where construction emissions overlap with operations.

The EPA dispersion model AERMOD, version 07026, was used to predict maximum ambient pollutant concentrations at or beyond the Berth 97-109 terminal boundary. A summary of the dispersion modeling results is presented here, and the complete dispersion modeling report is included in Appendix E2.

The analysis modeled peak 1-hour and annual NO_X emissions, peak 1-hour and 8-hour CO emissions, peak daily (24-hour) PM_{10} emissions, and peak daily (24-hour) $PM_{2.5}$ emissions. Emissions from marine vessels, terminal equipment, rail yard equipment, trains, and trucks were modeled. Emissions were estimated for the milestone years 2005, 2010, 2015, 2030, and 2045; and the highest emission rate for each source category was used in the dispersion modeling. Peak Phase II/III construction emissions were added to the 2010 operational emissions prior to selecting the peak analysis year.

Table 3.2-31 shows the maximum offsite NO_2 and CO concentrations predicted for the proposed Project without mitigation. The table indicates that the maximum 1-hour NO_2 concentration of 2,043 $\mu g/m^3$ would exceed the SCAQMD significance threshold of 338 $\mu g/m^3$. The annual NO_2 concentration of 108 $\mu g/m^3$ would exceed the SCAQMD significance threshold of 56.4 $\mu g/m^3$.

The maximum 1-hour and 8-hour CO concentrations from operational emissions of the proposed Project would be well below the SCAQMD significance thresholds.

Table 3.2-32 shows the maximum offsite PM_{10} and $PM_{2.5}$ concentrations predicted for the proposed Project without mitigation. The maximum CEQA increment (proposed Project minus CEQA baseline), and NEPA increment (proposed Project minus NEPA baseline) are also shown. Increments of PM_{10} concentrations were obtained by subtracting the CEQA baseline or NEPA baseline concentrations from the proposed Project concentrations at each common receptor. The maximum increment among all receptors was selected for comparison with the SCAQMD threshold.

Table 3.2-31. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of the Proposed Project without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Proposed Project (μg/m^3)	Background Concentration[b] (μg/m^3)	Total Ground Level Concentration [a] (μg/m^3)	SCAQMD Threshold (μg/m^3)
NO_2 [c]	1-hour	1,780	263	**2,043**	338
	Annual	55	52.7	**108**	56.4
CO	1-hour	1,833	4,809	6,642	23,000
	8-hour	456	4,008	4,464	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75% percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations. This is a conservative approach because the majority of emission sources that contribute to the maximum NO_2 impact are within 1,500 meters of this location, where the NO_2 conversion factor for this distance would be lower. The relatively large source-receptor distance and high NO_2 conversion rate was conservatively selected based on the elongated shape of the project terminal.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-32. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Proposed Project without Mitigation

	Maximum Modeled Concentration of Proposed Project (μg/m^3)	Maximum Modeled Concentration of CEQA Baseline (μg/m^3)	Maximum Modeled Concentration of NEPA Baseline (μg/m^3)	Ground-Level Concentration CEQA Increment [c] (μg/m^3)	Ground-Level Concentration NEPA Increment [c] (μg/m^3)	SCAQMD Threshold (μg/m^3)
PM_{10} 24-hour	15.6	10.2	5.7	**10.0**	**10.0**	2.5
$PM_{2.5}$ 24-hour	12.9	9.4	3.8	**8.0**	**9.1**	2.5

Notes:

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Project concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project describes how the increments are calculated.

c) The CEQA Increment represents Project minus CEQA baseline. The NEPA Increment represents Project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

The CEQA and NEPA increments for 24-hour PM_{10} concentrations are predicted to be 10.0 and 10.0 μg/m^3, respectively. Both of the increments exceed the SCAQMD PM_{10} threshold of 2.5 μg/m^3 for the proposed Project operations.

The CEQA and NEPA increments for 24-hour $PM_{2.5}$ concentrations are predicted to be 8.0 and 9.1 $\mu g/m^3$, respectively. Both of the increments exceed the SCAQMD $PM_{2.5}$ threshold of 2.5 $\mu g/m^3$ for the proposed Project operations.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with the proposed Project operations would be significant for NO_2 (1-hour average and annual average) and PM_{10} and $PM_{2.5}$ (24-hour average). Therefore, significant impacts under CEQA would occur.

NEPA Impact Determination

Maximum offsite ambient pollutant concentrations associated with the proposed Project operations would be significant for NO_2 (1-hour average and annual average) and PM_{10} and $PM_{2.5}$ (24-hour average). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact during proposed Project operation, **MM AQ-9** through **MM AQ-24** described above for **Impact AQ-3** would be applied to the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Table 3.2-33 presents the maximum offsite ground-level concentrations of NO_2 and CO for the proposed Project after mitigation. Table 3.2-34 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments after mitigation.

Table 3.2-33. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of the Proposed Project after Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project ($\mu g/m^3$)	Background Concentration [b] ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	1,919	263	**2,182**	338
	Annual	48	52.7	**101**	56.4
CO	1-hour	10,613	4,809	15,422	23,000
	8-hour	2,620	4,008	6,628	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75.0 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations. This is a conservative approach because the majority of emission sources that contribute to the maximum NO_2 impact are within 1,500 meters of this location, where the NO_2 conversion factor for this distance would be lower. The relatively large source-receptor distance and high NO_2 conversion rate was conservatively selected based on the elongated shape of the project terminal.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-34. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Proposed Project after Mitigation

	Maximum Modeled Concentration of Mitigated Project (µg/m^3)	Maximum Modeled Concentration of CEQA Baseline (µg/m^3)	Maximum Modeled Concentration of NEPA Baseline (µg/m^3)	Ground Level Concentration CEQA Increment (µg/m^3)	Ground Level Concentration NEPA Increment (µg/m^3)	SCAQMD Threshold (µg/m^3)
PM_{10} 24-hour	10.1	10.2	5.67	**6.5**	**6.2**	2.5
$PM_{2.5}$ 24-hour	7.8	9.4	3.8	**5.2**	**5.3**	2.5

Notes:

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Project concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project describes how the increments are calculated.

c) The CEQA Increment represents the Mitigated Project minus CEQA baseline. The NEPA Increment represents the Mitigated Project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

With mitigation, offsite ambient concentrations from proposed Project operations would be reduced for PM_{10}, $PM_{2.5}$, and annual NO_X, but would increase for CO and 1-hour NO_X. These increases in concentrations are a result of LPG yard tractors having much higher NO_X and CO emissions than their counterpart diesel yard tractors in the peak emission analysis year 2010 (addressed by **MM AQ-15**).

From a CEQA perspective, offsite ambient concentrations from proposed Project operations after mitigation would be reduced for PM_{10} and $PM_{2.5}$, but would remain significant for 1-hour and annual NO_2, and 24-hour PM_{10} and $PM_{2.5}$.

From a NEPA perspective, offsite ambient concentrations from proposed Project operations after mitigation would be reduced for PM_{10} and $PM_{2.5}$, but would remain significant for 1-hour and annual NO_2, and 24-hour PM_{10} and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be significant for NO_2, PM_{10}, and $PM_{2.5}$ under CEQA and NEPA.

Proposed Project – Impact AQ-5: The proposed Project would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

Proposed Project-generated truck trips would affect intersections predicted to operate at a poor level of service (LOS) in future years. During periods of near-calm winds, heavily congested intersections can produce elevated levels of carbon monoxide in their immediate vicinity. Therefore, a CO microscale modeling analysis was conducted to determine whether the proposed Project would contribute to a violation of the ambient air quality standards for CO at a local intersection.

The intersection of Harbor Boulevard/SR-47 Eastbound Off-Ramp/Swinford Avenue (p.m. peak) was selected for the CO analysis. This intersection is the only one predicted by the traffic study (Section 3.6) to operate at LOS F for more than one year of study. The intersection would operate at LOS F in 2015 and 2030 under either proposed Project or No Project (Alternative 1) conditions. Furthermore, it would have the highest volume-to-capacity (V/C) ratio of any Project-affected intersection in all 3 study years.

The analysis was conducted using the CAL3QHC dispersion model, using guidance from Caltrans (1997) and the SCAQMD (2005). Total peak-hour traffic through the intersection was modeled for each proposed Project study year, both with and without the proposed Project-generated truck and automobile trips. Peak-hour traffic volumes were provided by the traffic study.

Table 3.2-35 presents maximum 1-hour and 8-hour CO concentrations predicted at locations 3 meters from the edge of the intersection. The results show that CO concentrations would not exceed the CO standards during any proposed Project study year, either with or without the Project. Despite increasing traffic volumes in the future, the results show a declining trend in CO concentrations. This declining trend is due to phasing in cleaner fuels, tighter vehicle emission standards, and the gradual replacement of older vehicles with newer, cleaner vehicles.

The input data and CAL3QHC output files for the CO intersection analysis are presented in Appendix E4.

Table 3.2-35. Maximum CO Concentrations at the Harbor/SR-47 EB Off-Ramp/Swinford Intersection – Proposed Project Without Mitigation

Project Year	1-Hour Concentration (ppm)		8-Hour Concentration (ppm)	
	No Project	Proposed Project	No Project	Proposed Project
2005	7.7	7.7	5.4	5.4
2015	6.4	6.4	4.8	4.8
2030	5.8	5.8	4.4	4.4
Most Stringent Standard	20	20	9	9

Notes:

a) 1-Hour concentrations include a background concentration of 5.9 ppm for 2005, 5.1 ppm for 2015, and 5.1 ppm for 2030.

b) 8-Hour concentrations include a background concentration of 4.6 ppm for 2005, 3.9 ppm for 2015, and 3.9 ppm for 2030. A persistence factor of 0.7 was used to convert the 1-hour modeled concentration to an 8-hour concentration.

c) CAL3QHC was run with meteorological conditions of 1.0 meter per second (m/s) wind speed, stability F, and 10-degree standard deviation of wind direction.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

NEPA Impact Determination

Significant impacts under NEPA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant.

Proposed Project – Impact AQ-6: The proposed Project would not create an objectionable odor at the nearest sensitive receptor.

Operation of the proposed Project would increase air pollutants due to the combustion of diesel fuel. Some individuals might find diesel combustion emissions to be objectionable in nature, although quantifying the odorous impacts of these emissions to the public is difficult. The mobile nature of most Project emission sources would help to disperse proposed Project emissions. Additionally, the distance between proposed Project emission sources and the nearest residents is expected to be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor. Significant odor impacts under CEQA, therefore, are not anticipated.

NEPA Impact Determination

As a result of the above, the potential is low for the Project to produce objectionable odors that would affect a sensitive receptor. Significant odor impacts under NEPA, therefore, are not anticipated.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Proposed Project – Impact AQ-7: The proposed Project would expose receptors to significant levels of TACs.

Project operations would emit TACs that could affect public health. An HRA spanning years 2004-2073 was conducted pursuant to a Protocol reviewed and approved by both CARB and SCAQMD (POLA, 2005). The period 2004-2073 is the 70-year exposure period with the greatest combined diesel particulate matter (DPM) emissions from proposed Project construction and operation. The HRA was used to evaluate potential health impacts to the public from TACs generated by proposed Project operations. The Hotspots Analysis and Reporting Program (HARP), version 1.3 (CARB, 2006), was used to perform health risk calculations based on output from the AERMOD dispersion model. The complete HRA report is included in Appendix E3 of this EIS/EIR.

As discussed in Section 3.2.4.1, a second HRA spanning the years 2009 through 2078 (2009-2078 HRA) was conducted to show impacts from the first year that the Port would be able to impose mitigation measures other than those required by the Settlement Agreement. The 2009-2078 HRA is intended for information purposes only and was not used to for significance determination. Since the 2009-2078 HRA assessed mitigated impacts only, the 2009-2078 HRA results are presented following the mitigated 2004-2073 HRA results.

The main sources of TACs from proposed Project operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. Project construction emissions from Phases II and III were also included in the HRA. As shown in Appendix E3, the contribution from Project construction to the health risk results would be minor relative to Project operational emissions. Phase I of construction was not included in the HRA because the 70-year period that includes Phase I (2001-2070) has fewer DPM emissions than the 2004-2073 period.

For health effects resulting from long-term exposure, CARB considers DPM as representative of the total health risks associated with the combustion of diesel fuel. TAC emissions from nondiesel sources (such as alternative fuel engines) and noninternal combustion sources (such as auxiliary boilers) also were evaluated in the HRA, although their impacts were minor in comparison to DPM. Since the Project would generate emissions of DPM, **Impact AQ-7** also discusses the effects of ambient PM on increased mortality and morbidity.

The HRA evaluated three different types of health effects: individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index. Individual lifetime cancer risk is the additional chance for a person to contract cancer after a lifetime of exposure to Project emissions. The “lifetime” exposure duration assumed in this HRA is 70 years for a residential receptor.

The chronic hazard index is a ratio of the long-term average concentrations of TACs in the air to established reference exposure levels. A chronic hazard index below 1.0 indicates that adverse noncancer health effects from long-term exposure are not expected. Similarly, the acute hazard index is a ratio of the short-term average concentrations of TACs in the air to established reference exposure levels. An acute hazard index below 1.0 indicates that adverse noncancer health effects from short-term exposure are not expected.

For the determination of significance from a CEQA standpoint, this HRA determined the incremental increase in health effects values due to the proposed Project by estimating the net change in impacts between the proposed Project and CEQA baseline conditions. For the determination of significance from a NEPA standpoint, this HRA determined the incremental increase in health effects values due to the proposed Project by estimating the net change in impacts between the proposed Project and NEPA baseline[5]. Both of these incremental health effects values (proposed Project minus CEQA baseline, and proposed Project minus NEPA baseline) were compared to the significance thresholds for health risk described in Section 3.2.4.2.

[5] The NEPA baseline scenario assumes that the Settlement Agreement measures for cargo handling equipment would be implemented, CAAP measure CHE-1 (Performance Standards for Cargo Handling Equipment) would begin January 1, 2009, and 100 percent alternative-fueled toppicks would be implemented starting 2009.

To estimate cancer risk impacts, VOC and DPM emissions were projected over a 70-year period, from 2004 through 2073. This 70-year projection of emissions was done for the proposed Project, CEQA baseline[6], and NEPA baseline to enable a proper calculation of the CEQA and NEPA cancer risk increments. To calculate the 70-year emissions, estimates of activity levels and emission factors were made for each year from 2004 through 2073. Yearly equipment activity levels between the Project analysis years were interpolated for the proposed Project and NEPA baseline. Activity levels after 2045 were held constant at their 2045 values. For the CEQA baseline, activity levels were held constant at their 2001 values for all years. Where applicable, yearly emission factors were allowed to change with time in accordance with normal fleet turnover rates (for terminal equipment, trucks, line haul locomotives, and tugboats), and existing regulations and agreements listed in Table 3.2-8.

Table 3.2-36 presents the maximum predicted health impacts associated with the proposed Project without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed residential, occupational, sensitive, student, and recreational receptors. Results are presented for the proposed Project, CEQA baseline, NEPA baseline, CEQA increment (proposed Project minus CEQA baseline), and NEPA increment (proposed Project minus NEPA baseline).

For each receptor type, the various health values in Table 3.2-36 often occur at different locations. This means that the CEQA increment cannot necessarily be determined by subtracting the CEQA baseline result from the proposed Project result in the table. Likewise, the NEPA increment cannot necessarily be determined by subtracting the NEPA baseline result from the proposed Project result in the table. Instead, the increments must be subtracted at each of the hundreds of modeled receptors, and the receptor with the highest difference is selected as the maximum increment. The following example shows how the maximum recreational CEQA cancer risk increment of 83 in a million in Table 3.2-36 was determined by examining the predicted risks at two modeled receptors.

Example for Determining Maximum Risk Increment

(1) Determine Recreational CEQA Increment for Receptor No. 1261

(a) Proposed Project cancer risk impact, recreational = 91.6 in a million
(b) CEQA baseline cancer risk impact, recreational = 8.9 in a million
(c) CEQA increment, recreational = 91.6 – 8.9 = 82.7 in a million

This receptor is not the location of the maximum proposed Project impact or the maximum CEQA baseline impact for a recreational receptor. Nevertheless, the CEQA increment of 82.7 in a million (rounded to 83 in a million in the table) is the highest increment of any modeled recreational receptor. Therefore, this receptor is the location of the maximum CEQA increment.

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[6] The 70-year emissions projection for the CEQA Baseline was done for 2001-2070, as this is the 70-year period projected forward from the CEQA Baseline year.

Table 3.2-36. Maximum Health Impacts Associated With The Proposed Project Without Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Proposed Project	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	99×10^{-6} (99 in a million)	14×10^{-6} (14 in a million)	**85×10^{-6} (85 in a million)**	9.1×10^{-6} (9.1 in a million)	**90×10^{-6} (90 in a million)**	10×10^{-6} 10 in a million
	Occupational	71×10^{-6} (71 in a million)	11×10^{-6} (11 in a million)	**61×10^{-6} (61 in a million)**	7.5×10^{-6} (7.5 in a million)	**63×10^{-6} (63 in a million)**	
	Sensitive	53×10^{-6} (53 in a million)	2.3×10^{-6} (2.3 in a million)	**50×10^{-6} (50 in a million)**	2.1×10^{-6} (2.1 in a million)	**51×10^{-6} (51 in a million)**	
	Student	1.5×10^{-6} (1.5 in a million)	0.1×10^{-6} (0.1 in a million)	1.4×10^{-6} (1.4 in a million)	0.1×10^{-6} (0.1 in a million)	1.4×10^{-6} (1.4 in a million)	
	Recreational	93×10^{-6} (93 in a million)	18×10^{-6} (18 in a million)	**83×10^{-6} (83 in a million)**	9.9×10^{-6} (9.9 in a million)	**83×10^{-6} (83 in a million)**	
Chronic Hazard Index	Residential	0.23	0.14	0.10	0.12	0.10	1.0
	Occupational	0.71	0.43	0.42	0.39	0.37	
	Sensitive	0.08	0.02	0.05	0.03	0.05	
	Student	0.08	0.02	0.05	0.03	0.05	
	Recreational	0.61	0.43	0.39	0.33	0.33	
Acute Hazard Index	Residential	1.31	0.13	**1.29**	0.24	**1.25**	1.0
	Occupational	2.05	0.22	**2.03**	0.38	**1.96**	
	Sensitive	1.10	0.04	**1.06**	0.14	**1.04**	
	Student	1.10	0.04	**1.06**	0.14	**1.04**	
	Recreational	1.58	0.22	**1.54**	0.34	**1.46**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type. Ships were conservatively assumed to use fuel with a 4.5 percent sulfur content for the 1-hour acute hazard index calculation.

g) The NEPA baseline emissions include as project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting 2009.

h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

(2) Determine Recreational CEQA Increment for Receptor No. F-446

(a) Proposed Project cancer risk impact, recreational = 92.5 in a million
(b) CEQA baseline cancer risk impact, recreational = 12.7 in a million
(c) CEQA increment, recreational = 92.5 – 12.7 = 79.8 in a million

This receptor happens to be the location of the maximum proposed Project impact of 92.5 in a million (rounded to 93 in a million) for a recreational receptor, shown in Table 3.2-36. However, the CEQA increment of 79.8 in a million is less than the CEQA increment at Receptor No. 1261. Therefore, this receptor is not the location of the maximum CEQA increment.

Although the above example shows the CEQA cancer risk increment being calculated at two modeled receptors, the complete determination of the maximum increment involves this same type of calculation at hundreds of modeled receptors. The calculation of the NEPA increment is also done this same way, as are the increments for the chronic and acute noncancer hazard indices, and the PM_{10} increments addressed in **Impact AQ-4**.

CEQA Impact Determination

Table 3.2-36 shows that the maximum CEQA cancer risk increment associated with the unmitigated proposed Project is predicted to be 85 in a million (85×10^{-6}), at a residential receptor. This risk value exceeds the significance criterion of 10 in a million and would be considered a significant impact. The receptor location for the maximum residential increment is on Knoll Hill, approximately 200 meters west of the proposed Berth 97-109 terminal boundary. The CEQA cancer risk increment would also exceed the threshold at occupational, sensitive, and recreational receptors. These exceedances are considered significant impacts under CEQA.

The maximum chronic hazard index CEQA increment associated with the unmitigated Project is predicted to be less than significant for all receptor types. The acute hazard index CEQA increment is predicted to be greater than the significance threshold for all receptor types.

NEPA Impact Determination

Table 3.2-36 shows that the maximum NEPA cancer risk increment associated with the unmitigated proposed Project is predicted to be 90 in a million (90×10^{-6}), at a residential receptor. This risk value exceeds the significance criterion of 10 in a million and would be considered a significant impact. The receptor location for the maximum residential increment is on Knoll Hill, approximately 200 meters west of the proposed Berth 97-109 terminal boundary. The NEPA cancer risk increment would also exceed the threshold at occupational, sensitive, and recreational receptors. These exceedances are considered significant impacts under NEPA.

The maximum chronic hazard index NEPA increment associated with the unmitigated Project is predicted to be less than significant for all receptor types. The acute hazard index NEPA increment is predicted to be greater than the significance threshold for all receptor types.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9** through **MM AQ-24** described above for **Impact AQ-3**. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-37 presents a summary of the maximum health impacts that would occur with operation of the proposed Project with mitigation. The mitigation measures would reduce the maximum residential cancer risk associated with the proposed Project by about 81 percent. The maximum residential chronic hazard index would be reduced by about 22 percent. The maximum residential acute hazard index would be reduced by about 15 percent.

The data in Table 3.2-37 show that the maximum CEQA cancer risk increment after mitigation is predicted to be 20 in a million (20×10^{-6}), at a recreational receptor. The maximum residential CEQA cancer risk increment after mitigation is predicted to be 11 in a million (11×10^{-6}), which is above the significance threshold. The receptor location for the maximum residential increment is in Wilmington, north of C Street and east of Figueroa Street. The CEQA cancer risk increment would also exceed the threshold at an occupational receptor. These exceedances are considered significant impacts under CEQA. The maximum chronic hazard index CEQA increment would remain less than significant for all receptor types. The acute hazard index CEQA increment is predicted to remain significant at residential, occupational, and recreational receptors.

Table 3.2-37. Maximum Health Impacts Associated With The Proposed Project With Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Proposed Project	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	19×10^{-6} (19 in a million)	14×10^{-6} (14 in a million)	**11×10^{-6} (11 in a million)**	9.1×10^{-6} (9.1 in a million)	**11×10^{-6} (11 in a million)**	10×10^{-6} 10 in a million
	Occupational	13×10^{-6} (13 in a million)	11×10^{-6} (11 in a million)	**13×10^{-6} (13 in a million)**	7.5×10^{-6} (7.5 in a million)	**13×10^{-6} (13 in a million)**	
	Sensitive	8.9×10^{-6} (8.9 in a million)	2.3×10^{-6} (2.3 in a million)	6.6×10^{-6} (6.6 in a million)	2.1×10^{-6} (2.1 in a million)	6.8×10^{-6} (6.8 in a million)	
	Student	0.2×10^{-6} (0.2 in a million)	0.1×10^{-6} (0.1 in a million)	0.2×10^{-6} (0.2 in a million)	0.1×10^{-6} (0.1 in a million)	0.2×10^{-6} (0.2 in a million)	
	Recreational	20×10^{-6} (20 in a million)	18×10^{-6} (18 in a million)	**20×10^{-6} (20 in a million)**	9.9×10^{-6} (9.9 in a million)	**19×10^{-6} (19 in a million)**	

Table 3.2-37. Maximum Health Impacts Associated With The Proposed Project With Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Proposed Project	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Chronic Hazard Index	Residential	0.18	0.14	0.06	0.12	0.06	1.0
	Occupational	0.59	0.43	0.32	0.39	0.26	
	Sensitive	0.05	0.02	0.03	0.03	0.02	
	Student	0.05	0.02	0.03	0.03	0.02	
	Recreational	0.50	0.43	0.28	0.33	0.22	
Acute Hazard Index	Residential	1.11	0.13	**1.09**	0.24	**1.05**	1.0
	Occupational	1.70	0.22	**1.68**	0.38	**1.61**	
	Sensitive	0.95	0.04	0.91	0.14	0.89	
	Student	0.95	0.04	0.91	0.14	0.89	
	Recreational	1.43	0.22	**1.40**	0.34	**1.32**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

g) The NEPA baseline emissions include as project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting 2009.

h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

The maximum NEPA cancer risk increment after mitigation is predicted to be 19 in a million (19×10^{-6}), at a recreational receptor. The maximum residential NEPA cancer risk increment after mitigation is predicted to be 11 in a million ($11 \text{ x } 10^{-6}$), which is above the significance threshold. The receptor location for the maximum residential increment is in Wilmington, north of C Street and east of Figueroa Street. The NEPA cancer risk increment would also exceed the threshold at an occupational receptor. These exceedances are considered significant impacts under NEPA. The maximum chronic hazard index NEPA increment would remain less than significant for all receptor types. The acute hazard index NEPA increment is predicted to remain significant at residential, occupational, and recreational receptors.

Table 3.2-38 presents results of the 2009-2078 HRA. The results are provided for information purposes only and were not used to determine significance. However, the 2009-2078 HRA results indicate that the mitigation measures imposed by the Port starting in 2009 would reduce the maximum residential cancer risk to less than 10 per million for both the CEQA and NEPA increments. The CEQA and NEPA cancer risk increments for occupational and recreational receptors would remain at or above the threshold.

Table 3.2-38. Maximum Health Impacts Associated with the Proposed Project with Mitigation, 2009-2078

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Proposed Project	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	9.3×10^{-6} (9.3 in a million)	14×10^{-6} (14 in a million)	7.5×10^{-6} (7.5 in a million)	3.6×10^{-6} (3.6 in a million)	7.7×10^{-6} (7.7 in a million)	10×10^{-6} 10 in a million
	Occupational	10×10^{-6} (10 in a million)	11×10^{-6} (11 in a million)	**10×10^{-6} (10 in a million)**	3.0×10^{-6} (3.0 in a million)	**10×10^{-6} (10 in a million)**	
	Sensitive	5.7×10^{-6} (5.7 in a million)	2.3×10^{-6} (2.3 in a million)	4.3×10^{-6} (4.3 in a million)	0.8×10^{-6} (0.8 in a million)	4.9×10^{-6} (4.9 in a million)	
	Student	0.2×10^{-6} (0.2 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.02×10^{-6} (0.02 in a million)	0.1×10^{-6} (0.1 in a million)	
	Recreational	15×10^{-6} (15 in a million)	18×10^{-6} (18 in a million)	**14×10^{-6} (14 in a million)**	4.0×10^{-6} (4.0 in a million)	**15×10^{-6} (15 in a million)**	

Notes:

a) The 2009-2078 HRA is for informational purposes only. It shows the risks that would occur over a 70-year exposure period starting in 2009, the first year that the Port is able to implement a wide array of mitigation measures.

b) Exceedances of the significance criteria are in bold. The significance thresholds apply to the CEQA and NEPA increments only.

c) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

d) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

g) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

h) The NEPA baseline emissions include as project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting 2009.

i) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Particulates: Morbidity and Mortality

Of great concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter [PM_{10}]) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM_{10} and $PM_{2.5}$.

The proposed Project would emit DPM during Project construction and operation. This discussion addresses potential health effects caused by DPM emissions and discusses existing standards and thresholds developed by regulatory agencies to address health impacts.

Health Effects of DPM Emissions

Epidemiological studies substantiate the correlation between the inhalation of ambient PM and increased mortality and morbidity (CARB2002 and CARB2007). Recently, CARB conducted a study to assess the potential health effects associated with exposure to air pollutants arising from ports and goods movement in the State (CARB, 2006a and CARB, 2006b). CARB's assessment evaluated numerous studies and research efforts, and focused on PM and ozone as they represent a large portion of known risk associated with exposure to outdoor air pollution. CARB's analysis of various studies allowed large-scale quantification of the health effects associated with emission sources. CARB's assessment quantified premature deaths and increased cases of disease linked to exposure to PM and ozone from ports and goods movement. Table 3.2-39 presents the statewide PM and ozone health effects identified by CARB (CARB, 2006b).

Table 3.2-39. Annual 2005 Statewide PM and Ozone Health Effects Associated with Ports and Goods Movement in California[a]

Health Outcome	Cases Per Year	Uncertainty Range (Cases per Year) [b]
Premature Death	2,400	720 to 4,100
Hospital Admissions (respiratory causes)	2,000	1,200 to 2,800
Hospital Admissions (cardiovascular causes)	830	530 to 1,300
Asthma and Other Lower Respiratory Symptoms	62,000	24,000 to 99,000
Acute Bronchitis	5,100	-1,200 to 11,000
Work Loss Days	360,000	310,000 to 420,000
Minor Restricted Activity Days	3,900,000	2,200,000 to 5,800,000
School Absence Days	1,100,000	460,000 to 1,800,000

Notes:

a) Does not include the contributions from particle sulfate formed from SO_X emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

b) Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

In addition, although epidemiologic studies are numerous, few toxicology studies have investigated the responses of human subjects specifically exposed to DPM, and the available epidemiologic studies have not measured the DPM content of the outdoor pollution mix. CARB has made quantitative estimates of the public health impacts of DPM based on the assumption that DPM is as toxic as the general ambient PM mixture (CARB, 2006c).

CARB's study concluded that there are significant uncertainties involved in quantitatively estimating the health effects of exposure to outdoor air pollution. Uncertain elements include emission and population exposure estimates, concentration-response functions, baseline rates of mortality and morbidity that are entered into concentration response functions, and occurrence of additional not-quantified adverse health effects (CARB, 2006). Many of these elements have a factor-of-two uncertainty. Numerous new studies, ongoing and proposed, will likely increase scientific knowledge and provide better estimates of DPM health effects.

It should be noted that PM in ambient air is a complex mixture that varies in size and chemical composition, as well as varying spatially and temporally. Different types of particles may cause different effects with different time courses, and perhaps only in susceptible individuals. The interaction between PM and gaseous co-pollutants adds additional complexity because in ambient air pollution, a number of pollutants tend to co-occur and have strong inter-relationships with each other (e.g., PM, SO_2, NO_2, CO, and ozone) (AQMD, 2007; CARB, 2006a; and CARB, 2006b).

Nevertheless, various studies have been published over the past 10 years that substantiate the correlation between the inhalation of ambient PM and increased cases of premature death from heart and/or lung diseases (Pope et al., 1995, 2002; Jerrett et al. 2005, Krewski et al., 2001). Studies such as these and studies that have followed since serve as the fundamental basis for PM air quality standards promulgated by AQMD, CARB, U.S. EPA, and the World Health Organization.

Existing CEQA Thresholds

Concentration Thresholds. Regulatory agencies set protective health-based short and long-term ambient concentration standards designed "in consideration of public health, safety, and welfare, including, but not limited to, health, illness, irritation to the senses, aesthetic value, interference with visibility, and effects on the economy" (Health and Safety Code Section 39606[a][2]). Ambient Air Quality Standards (AAQS) specify concentrations and durations of exposure to air pollutants that reflect the relationships between the intensity and composition of air pollution and undesirable effects. The fundamental objective of an AAQS is to provide a basis for preventing or abating adverse health or welfare effects of air pollution.

In developing the AAQS, federal, state, and local air quality regulatory agencies consider existing health science literature and recommendations from Office of Environmental Health Hazard Assessment (OEHHA). Standards are set to ensure that sensitive population sub-groups are protected from exposure to levels of pollutants that may cause adverse health effects. In the case of PM, CAAQS are peer reviewed by the Air Quality Advisory Committee (AQAC), an external scientific peer review committee, comprised of world-class scientists in the PM field.

Within the South Coast Air Basin, the SCAQMD furthermore identifies localized ambient significance thresholds. These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. The localized standards for PM are more stringent than either the NAAQS or the CAAQS. SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$ are 10.4 $\mu g/m^3$ for construction and operation. These values were developed based on CARB guidance and epidemiological studies showing significant toxicity (resulting in mortality and morbidity) related to exposure to fine particles. The proposed Project conducted dispersion analysis to determine ambient air concentrations and determined localized significance (Section 3.2.4.4).

Emission Thresholds. PM emissions also affect air quality on a regional basis. When fugitive dust enters the atmosphere, the larger particles of dust typically fall quickly to the ground, but smaller particles less than 10 microns in diameter may remain suspended for longer periods, giving the particles time to travel across a regional area affecting receptors at some distance from the original emissions source.

For this reason, the SCAQMD established mass daily thresholds for construction and operational activities for PM. The mass daily thresholds are emissions-based thresholds used to assess the potential significance of criteria air pollutants on the regional level. Emissions that exceed the regional significance thresholds are mass daily emissions that may have significant adverse regional effects. The proposed Project quantified mass daily emissions and determined significance (Section 3.2.4.3).

HRA Thresholds. SCAQMD specifies thresholds for cancer risk and noncancer chronic and acute hazard impacts. The cancer risk calculation methodology accounts for the cancer potency of a pollutant and the expected dose for exposure pathways. For chronic noncancer and acute exposures, maximum annual concentrations and peak daily concentrations, respectively are compared with the OEHHA Reference Exposure Levels (REL), which are used as indicators of potential adverse noncancer health effects. The RELs are concentrations, at or below which no adverse health effects are anticipated in the general human population and are based on the most sensitive relevant adverse health effect reported in the medical and toxicological literature. RELs are designed to protect the most sensitive individuals in the population by the inclusion of margins of safety.

Risk assessment and health impact determination methodologies rely on risk assessment health values published by OEHHA, which in turn are based on results of numerous toxicology and epidemiology studies. For DPM, OEHHA has established health values for cancer and noncancer chronic effects to be used in quantification of health impacts. The proposed Project quantified both cancer risk and noncancer chronic impacts from DPM exposure, per OEHHA risk assessment methodology.

In addition, the Port has adopted SCAQMD's CEQA threshold of 10 in a million excess cancer risk and a 1.0 Hazard Index in evaluating new projects (Section 3.2.4.3). The thresholds set by EPA, CARB, and SCAQMD for localized, regional and toxic impacts are designed to account for health impacts, such as premature deaths, cardiac and respiratory hospitalizations, asthma, lost work/school days. The proposed Project has quantified localized, regional and toxic impacts of DPM (Section 3.2.4.3).

Quantifying Morbidity and Mortality

CARB's recent study (CARB, 2006a and CARB, 2006b) used a health effects model, based on multiple epidemiological studies, which quantified expected noncancer impacts of mortality and morbidity from ambient PM exposure (for example premature deaths, cardiac and respiratory hospitalizations, asthma and other lower respiratory symptoms, and lost work/school days). The study focused on large-scale applications such as the benefits of attaining the State air quality standard for $PM_{2.5}$, the impacts of goods movement emissions on a statewide and broad regional level, and the impacts from combined operations at the Ports of Los Angeles and Long Beach (CARB, 2006a and CARB, 2006b).

CARB staff have stated that it would be neither appropriate nor meaningful to apply the health effects model used in the CARB study to quantify the mortality and morbidity impacts of PM on a project that is the size of the proposed Project because values quantified for a specific location would fall within the margin of error for their methodology (CARB, 2007). Because the CARB methodology was designed for larger-scaled projects affecting a much larger population, the methodology may not be sensitive enough to provide accurate results for projects affecting much smaller populations. The proposed Project is located adjacent to the San Pedro and Wilmington areas and, based on the health risk assessment completed for this Project, the potential health impacts of PM emissions will largely be restricted to an area 4 miles east-west by 5 miles north-south around the terminal area (about 20,000 people). In contrast, the CARB study looked at a 40-mile by 50-mile area with a population of over 400,000 people. In addition CARB is also in the process of updating the health information that relates changes in $PM_{2.5}$ exposures to premature death. A public workshop was held on August 21, 2006 to discuss our approach for revising the methodology. A formal review of the updated methodology and analysis will be conducted by a peer review committee composed of experts in the fields of epidemiology, health impacts quantification and economics (personal communications, CARB staff).

Due to potential scale issues, Port staff also contacted OEHHA to discuss an appropriate methodology to assess the potential morbidity and mortality impacts from the Project. OEHHA is in the process of developing further guidance on health impacts from PM exposure. In the absence of further guidance, staff was directed to the "Public Hearing to Consider Amendments to Ambient Air Quality Standards for Particulate Matter and Sulfates" (CARB 2002). This document pools together different research papers and epidemiological studies and describes how different impacts of morbidity and mortality (for example, long-term mortality, chronic bronchitis, and hospital admissions for asthma) were quantified in considering AAQS revisions for PM. The document used concentration-response (C-R) functions to determine morbidity and mortality impacts. C-R functions are equations that relate the change in the number of adverse health effect incidences in a population to a change in pollutant concentration experienced by that population. Normally, epidemiological studies are used to estimate the relationship between a pollutant and a particular health endpoint at different locations. Most common C-R functions are represented in log-linear form.

This is the basic form of a C-R function:

$$\Delta y = y_0 (e^{\beta \Delta PM} - 1) * \text{population}$$

where:

Δy = changes in the incidence of a health endpoint corresponding to a particular change in PM

y_0 = baseline incidence rate per person

ß = coefficient (PM_{10}: 0.00231285); this coefficient is based on the relative risk that is associated with a particular concentration and varies from one study to another.

ΔPM = change in PM concentration

Using the guidance presented in the document, and using a coefficient based on a 1.12 relative risk that is associated with a mean change of 24.5 $\mu g/m^3$ (CARB/OEHHA, 2002), the following represents the result of a sample calculation for long-term mortality due to PM_{10} for the proposed Project (without mitigation). The calculation is dependent on the following:

Location: Lat 33.755368, Long –118.277490

Population (>25 years of age): 3,347 within a 1-mile radius

Change in annual PM_{10} concentration: 0.1 $\mu g/m^3$ (unmitigated peak Project minus CEQA baseline, as shown in Figure 3.2-10)

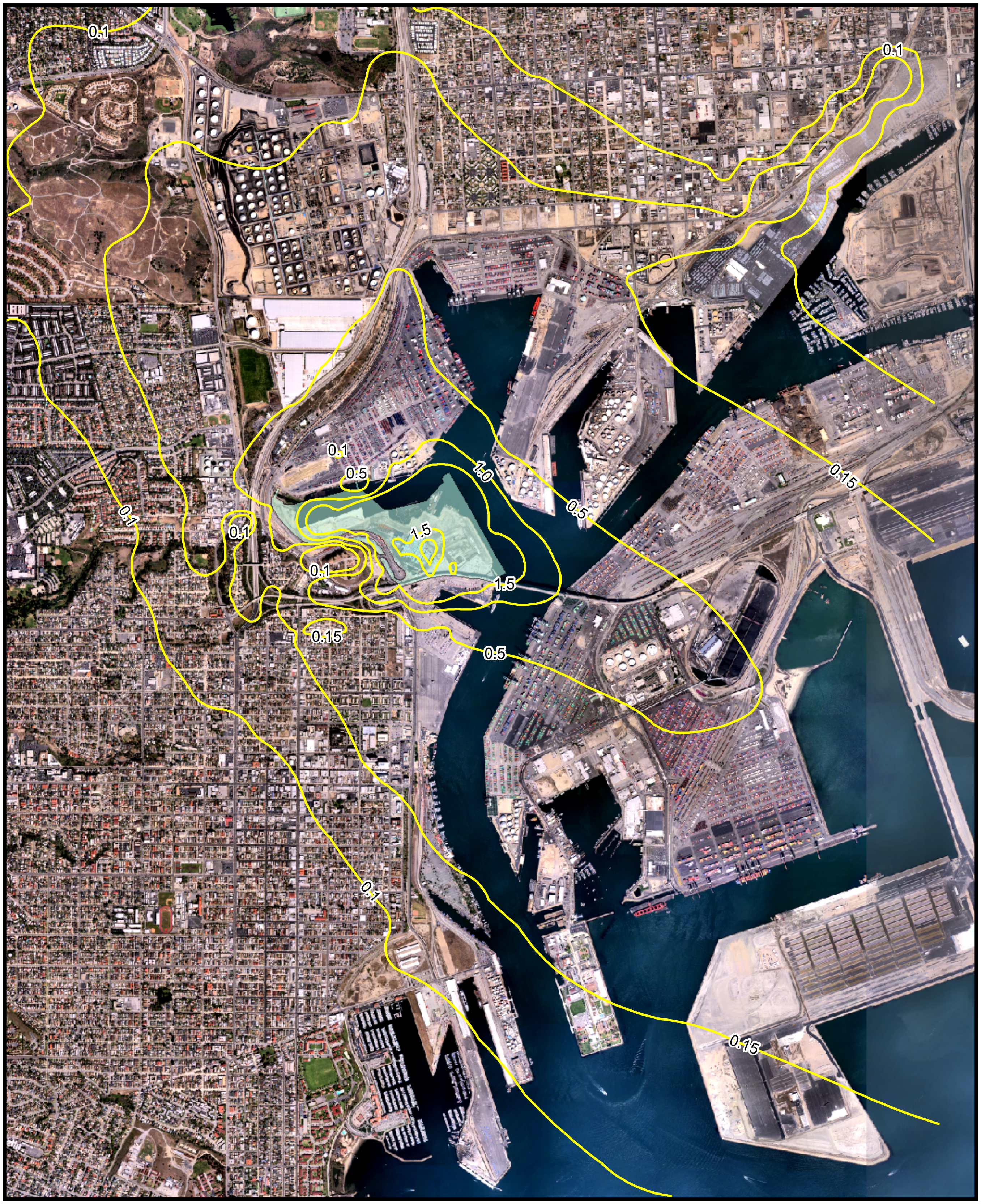
The increase in incidence of long-term mortality corresponding to this change in PM_{10} concentration was calculated to be: 0.0073 cases per year.

However, as shown in Section 3.2.4.3, proposed **MM AQ-9** through **MM AQ-24** are expected to reduce DPM emissions relative to baseline DPM emissions, thereby reducing potential impacts on morbidity and mortality.

According to the CARB/OEHHA document, the standard error of the ß coefficient is 0.0006023 for PM_{10}.

It is important to note that the parameters in the C-R functions can vary widely depending on the study. For example, some studies exclude accidental deaths from their mortality counts while others include all deaths. Furthermore, some studies consider only members of a particular subgroup of the population, e.g., individuals 30 and older, while other studies consider the entire population in the study location. When applying a C-R function from an epidemiological study to estimate changes in the incidence of a health endpoint corresponding to a particular change in PM in a location, it is important to use the appropriate value of parameters for the C-R function. That is, the measure of PM, the type of population, and the characterization of the health endpoint should be the same as or as close as possible to those used in the study that estimated the C-R function. The sample analysis presented here attempted to use parameters as closely related to the chosen C-R function as possible.

Among the uncertainties in the risk estimates is the degree of transferability of the concentration-response functions from one geographical area to another. Many of the epidemiologic studies used by CARB/OEHHA do include several California cities, but not all. Another uncertainty stems from the issue of co-pollutants.



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Legend

Annual PM_{10} Concentrations for Peak Year of Emissions ($\mu g/m^3$)

Proposed Project Terminal Area

N

0 3,000 Feet

0 1,000 Meters

1:36,000

Figure 3.2-10
Annual PM_{10} Concentrations for Proposed Project Minus CEQA Baseline

CH2MHILL

FigurePM10.pdf

Specifically, it is possible that some of the estimated health effects include the effects of both PM and other correlated pollutants. Finally, the studies used in developing the C-R functions do not usually take into consideration estimates of averting behaviors. Examples of averting behaviors include measures that prevent symptoms from occurring in the first place, such as avoiding strenuous exertion on days with high PM, staying indoors, the use of filters, etc.

However, perhaps the most compelling use limitation to use of C-R functions for site-specific projects is the consideration of whether it is valid to apply the C-R functions to changes in ambient PM concentrations that are far below the thresholds used to develop the C-R functions. For example, the CARB/OEHHA analysis applied a threshold of 18 $\mu g/m^3$ for the long-term mortality C-R function because this was the lowest concentration level observed in the long-term mortality studies evaluated. In other words, CARB/OEHHA assumed that the C-R functions were continuous and differentiable down to threshold levels. In the case of trying to quantify Project-specific impacts, it may not be appropriate to use C-R functions that were developed with a threshold significantly higher than the change in PM due to the Project.

Proposed Project – Impact AQ-8: The proposed Project would not conflict with or obstruct implementation of an applicable AQMP.

Project operation would produce emissions of nonattainment pollutants primarily in the form of diesel exhaust. The 2003 AQMP proposes emission reduction measures that are designed to bring the South Coast Air Basin into attainment of the state and national ambient air quality standards. The attainment strategies in these plans include mobile source control measures and clean fuel programs that are enforced at the state and federal level on engine manufacturers and petroleum refiners and retailers; as a result, proposed Project operation would comply with these control measures. The SCAQMD also adopts AQMP control measures into the SCAQMD rules and regulations, which are then used to regulate sources of air pollution in the South Coast Air Basin. Therefore, compliance with these requirements would ensure that the proposed Project would not conflict with or obstruct implementation of the AQMP.

The Port of Los Angeles regularly provides SCAG with its Portwide cargo forecasts for development of the AQMP. Therefore, the attainment demonstrations included in the 2003 AQMP account for the emissions generated by projected future growth at the Port. Because one objective of the proposed Project is to accommodate growth in cargo throughput at the Port, the AQMP accounts for the Project and conforms to the SIP.

CEQA Impact Determination

The proposed Project would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

NEPA Impact Determination

The proposed Project would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under NEPA are not anticipated.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Proposed Project – Impact AQ-9: The proposed Project would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Climate change, as it relates to man-made GHG emissions, is by nature a global impact. An individual project does not generate enough GHG emissions to significantly influence global climate change by itself (AEP, 2007). The issue of global climate change is, therefore, a cumulative impact. Nevertheless, for the purposes of this EIS/EIR, the LAHD has opted to address GHG emissions as a Project-level impact. In actuality, an appreciable impact on global climate change would only occur when the Project GHG emissions combine with GHG emissions from other man-made activities on a global scale.

Table 3.2-40 summarizes the total GHG construction emissions associated with the proposed Project. The emissions are totaled over the entire multiple-year construction period. The construction sources for which GHG emissions were calculated include off-road construction equipment, on-road trucks, marine cargo vessels used to deliver equipment to the site, and worker commute vehicles.

Table 3.2-40. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Proposed Project

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.2	0.0	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100 [b]	840	0.1	0.0	846
Crane Delivery and Installation	87	0.0	0.0	87
Berth 100 72-Acre Backlands Development	619	0.1	0.0	623
Construction of Bridge 1	33	0.0	0.0	34
Berth 121 Gate Modifications	29	0.0	0.0	29
Worker Trips	1,025	0.2	0.1	1,073
Phase II				
Construct Berth 102	418	0.0	0.0	421
Construct Berth 100-109 Buildings –	90	0.0	0.0	90
Construct 18 of 45-acre Backlands –	253	0.0	0.0	255
Construct Bridge 2	34	0.0	0.0	34
Construct 17 of 45-acre Backland	238	0.0	0.0	239
Construct 10 of 45-acre Backlands (Behind Rear Berth 102)	141	0.0	0.0	142
Crane Delivery and Installation	153	0.0	0.0	154
Worker Trips	833	0.2	0.1	880
Phase III				
South Extension of Berth 100	1,246	0.1	0.0	1,253
Construct 25-acre Backlands (Behind Berth 100)	375	0.0	0.0	377
Crane Delivery and Installation	56	0.0	0.0	56
Worker Trips	833	0.2	0.1	880

Table 3.2-40. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Proposed Project

	CO_2	CH_4	N_2O	CO_2e
Total Construction Emissions	**8,596**	**1**	**0**	**8,773**
CEQA Impact [e]	**8,596**	**1**	**0**	**8,773**
NEPA Impact [e]	**5,486**	**1**	**0**	**5,561**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total Project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total Project construction emissions minus NEPA baseline emissions. The NEPA baseline construction emissions are reported in Table 3.2-12.

Table 3.2-41 summarizes the annual unmitigated GHG emissions that would occur in California from operation of the Berth 97-109 Container Terminal Project. The emission sources for which GHG emission were calculated include ships, tugboats, on-road trucks, trains rail yard equipment, terminal equipment, fugitive refrigerant losses from refrigerated containers (reefers), on-terminal electricity usage, and worker commute vehicles. The table also shows the net change in the Project's GHG emissions relative to both the CEQA and NEPA baselines.

Table 3.2-41. Annual Operational GHG Emissions – Unmitigated Proposed Project

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	6,015	0.8	0.1	0	0	0	6,049
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	19,857	1.9	0.2	0	0	0	19,970
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**175,884**	**12.8**	**3.8**	**0.07**	**0.17**	**0.09**	**178,080**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**173,451**	**12.0**	**3.8**	**0.07**	**0.17**	**0.09**	**175,622**
NEPA Baseline	24,126	20.9	0.3	0	0	0	24,668
Project Minus NEPA Baseline	**151,758**	**-8.1**	**3.5**	**0.07**	**0.17**	**0.09**	**153,412**

Table 3.2-41. Annual Operational GHG Emissions – Unmitigated Proposed Project

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2015							
Ships – Transit	67,984	9.0	0.6	0	0	0	68,358
Ships – Hoteling	11,763	1.6	0.1	0	0	0	11,829
Tugboats	603	0.1	0.0	0	0	0	606
Trucks	376,202	18.8	9.4	0	0	0	379,504
Trains	20,644	2.9	0.2	0	0	0	20,768
Rail Yard Equipment	4,415	0.0	0.1	0	0	0	4,432
Terminal Equipment	57,346	0.8	0.7	0	0	0	57,571
Reefer Refrigerant Losses	0	0.0	0.0	0.21	0.49	0.25	2,153
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	1,827	0.0	0.0	0	0	0	1,830
Worker Trips	2,165	0.6	0.3	0	0	0	2,287
Total For Project Year 2015	**542,949**	**33.7**	**11.4**	**0.21**	**0.49**	**0.25**	**549,338**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**540,516**	**33.0**	**11.4**	**0.21**	**0.49**	**0.25**	**546,881**
NEPA Baseline	28,259	0.9	0.1	0	0	0	28,295
Project Minus NEPA Baseline	**514,690**	**32.8**	**11.3**	**0.21**	**0.49**	**0.25**	**521,044**
Project Year 2030							
Ships – Transit	93,074	12.3	0.8	0	0	0	93,586
Ships – Hoteling	13,432	1.8	0.1	0	0	0	13,508
Tugboats	775	0.1	0.0	0	0	0	779
Trucks	457,336	22.2	11.1	0	0	0	461,244
Trains	24,523	3.4	0.2	0	0	0	24,671
Rail Yard Equipment	5,568	0.0	0.1	0	0	0	5,589
Terminal Equipment	76,385	0.4	0.9	0	0	0	76,672
Reefer Refrigerant Losses	0	0.0	0.0	0.28	0.65	0.33	2,868
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	1,934	0.0	0.0	0	0	0	1,937
Worker Trips	2,654	0.8	0.4	0	0	0	2,803
Total Project Year 2030	**675,681**	**41.0**	**13.7**	**0.28**	**0.65**	**0.33**	**683,656**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**673,248**	**40.3**	**13.7**	**0.28**	**0.65**	**0.33**	**681,199**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**647,391**	**40.1**	**13.6**	**0.28**	**0.65**	**0.33**	**655,329**
Project Year 2045							
Ships – Transit	93,074	12.3	0.8	0	0	0	93,586
Ships – Hoteling	13,432	1.8	0.1	0	0	0	13,508
Tugboats	775	0.1	0.0	0	0	0	779
Trucks	457,520	22.2	11.1	0	0	0	461,428
Trains	24,523	3.4	0.2	0	0	0	24,671

Table 3.2-41. Annual Operational GHG Emissions – Unmitigated Proposed Project

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Rail Yard Equipment	5,568	0.0	0.1	0	0	0	5,589
Terminal Equipment	76,385	0.4	0.9	0	0	0	76,672
Reefer Refrigerant Losses	0	0.0	0.0	0.28	0.65	0.33	2,868
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	1,934	0.0	0.0	0	0	0	1,937
Worker Trips	2,711	0.8	0.4	0	0	0	2,863
Total Project Year 2045	**675,923**	**41.0**	**13.7**	**0.28**	**0.65**	**0.33**	**683,901**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**673,490**	**40.3**	**13.7**	**0.28**	**0.65**	**0.33**	**681,444**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**647,632**	**40.1**	**13.7**	**0.28**	**0.65**	**0.33**	**655,575**

Notes:

a) One metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a.

CEQA Impact Determination

Table 3.2-40 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, Table 3.2-41 shows that in each future Project year, annual operational CO_2e emissions would increase relative to the CEQA baseline. These increases are considered a significant impact under CEQA.

NEPA Impact Determination

Table 3.2-40 shows that total CO_2e emissions during project construction would exceed NEPA baseline construction emissions. In addition, Table 3.2-41 shows that in each future Project year, annual operational CO_2e emissions would increase relative to the NEPA baseline.

Mitigation Measures

Measures that reduce electricity consumption or fossil fuel usage from Project emission sources would reduce proposed GHG emissions. The following operational mitigation measures already developed for criteria pollutant emissions as part of **Impact AQ-3** would also reduce operational GHG emissions:

MM AQ-9: Alternative Maritime Power (AMP)

The use of electricity from the power grid would reduce GHG emissions during hoteling because electricity can be produced more efficiently at centralized power plants than from auxiliary engines on ships. In addition, a fraction of LADWP electricity is generated from renewable sources such as hydroelectric, which further reduces its GHG emissions on a per kW-hr basis. As a result, a hoteling ship using AMP would reduce its auxiliary power GHG emissions by about 36 percent compared to a ship using its auxiliary engines for power.

MM AQ-10: Vessel Speed Reduction Program

The average cruise speed for a container vessel ranges from about 18 to 25 knots; depending on the size of a ship (larger ships generally cruise at higher speeds). For a ship with a 24-knot cruise speed, for example, a reduction in speed to 12 knots reduces the main engine load factor from about 83 to 10 percent, due to the cubic relationship of load factor to speed. The corresponding reduction in overall container ship transit GHG emissions (main and auxiliary engines) from the California overwater border to the Precautionary Area is approximately 60 percent.

MM AQ-17: Yard Equipment at Berth 97-109 Terminal

Starting in 2009, this measure would eliminate onsite criteria pollutant emissions from RTGs by converting them to electric. The use of electricity from the power grid rather than individual vehicles burring fossil fuels would reduce GHG emissions from RTC equipment because electricity can be produced more efficiently at centralized power plants than from individual equipment.

MM AQ-20: LNG Trucks

LNG has a lower hearing value than diesel fuel, therefore it generates fewer GHG emissions when combusted. Assuming approximately the same fuel usage, on-road equipment LNG trucks would generate about 20 percent fewer CO_2 emissions than diesel fueled trucks.

MM AQ-21: Truck Idling Reduction Measures

A reduction in truck idling at the terminal would reduce fuel consumption and, therefore, GHG emissions. The unmitigated emissions from trucks idling at the Berth 97-109 terminal represent about 1 percent of Project-generated truck emissions and about 0.5 percent of overall Project GHG emissions. Although not quantified in this analysis, implementation of this measure is expected to reduce Project GHG emissions by less than 0.5 percent.

The following additional mitigation measures specifically target Project GHG emissions. They were developed through an applicability and feasibility review of possible measures identified in the *Climate Action Team Report to Governor Schwarzenegger* and *the California Legislature* (State of California, 2006) and the CARB *Proposed Early Actions to Mitigate Climate Change in California* (CARB, 2007). The strategies proposed in these two reports for the commercial/industrial sector are listed in Table 3.2-42, along with an applicability determination for the proposed Project.

Table 3.2-42. Project Applicability Review of Potential GHG Emission Reduction Strategies

Operational Strategy	Applicability to Proposed Project
Commercial and Industrial Design Features	
Vehicle Climate Change Standards	Regulatory measure implemented by CARB
Diesel Anti-Idling	**MM AQ-21** (truck idling); also regulatory measures implemented by CARB
Other Light duty Vehicle Technology	Regulatory measure implemented by CARB (standards will phase in starting 2009)
HFCs Reduction	Future regulatory measure planned by CARB
Transportation Refrigeration Units, Off Road Electrification, Port Electrification	**MM AQ-9** (AMP for ships); off-loaded reefers are electrified as part of the Project; also, a future regulatory measure is planned by CARB
Alternative Fuels: Biodiesel blends	Future regulatory measure planned by CARB
Alternative Fuel: Ethanol vehicles or enhanced ethanol/gasoline blends	Future regulatory measure planned by CARB
Heavy Duty Vehicle Emissions Reduction Measures	**MM AQ-10** (VSRP for ships) and **AQ-18** (truck idling); Portwide CAAP measure HDV2 (trucks); also a regulatory measure implemented by CARB
Reduced Venting in Gas Systems	Not applicable to Project
Building Operations Strategy	
Recycling	**MM AQ-29;** also a regulatory measure implemented by the Integrated Waste Management Board
Building Energy Efficiency	**MM AQ-25 through MM AQ-28;** also a regulatory measure implemented by the California Energy Commission
Green Buildings Initiative	Future regulatory measure planned by the State and Consumer Services and Cal/EPA
California Solar Initiative	**MM AQ-28**; also a future regulatory measure is planned by the California Public Utilities Commission

Note: These strategies are found in the *California Climate Action Team's report to the Governor* (State of California, 2006) and CARB's *Proposed Early Actions to Mitigate Climate Change in California* (CARB, 2007).

MM AQ-25: ***LEED.*** **The main terminal building shall obtain the Leadership in Energy and Environmental Design (LEED) gold certification level.**

LEED certification is made at one of the following four levels, in ascending order of environmental sustainability: certified, silver, gold, and platinum. The certification level is determined on a point-scoring basis, where various points are given for design features that address the following areas (U.S. Green Building Council, 2005):

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources

- Indoor Environmental Quality
- Innovation and Design Process

As a result, a LEED-certified building will be more energy efficient, thereby reducing GHG emissions compared to a conventional building design. Electricity consumption at the on-terminal buildings represents about 1 percent of overall Project GHG emissions.

Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

MM AQ-26: ***Compact Fluorescent Light Bulbs.*** **All interior buildings on the premises shall exclusively use compact fluorescent light bulbs for ambient lighting within all terminal buildings. The tenant shall also maintain and replace any Port-supplied compact fluorescent light bulbs.**

Fluorescent light bulbs produce less waste heat and use substantially less electricity than incandescent light bulbs. Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

MM AQ-27: ***Energy Audit.*** **The tenant shall conduct a third party energy audit every 5 years and install innovative power saving technology where feasible, such as power factor correction systems and lighting power regulators. Such systems help to maximize usable electric current and eliminate wasted electricity, thereby lowering overall electricity use.**

This mitigation measure primarily targets large on-terminal electricity consumers such as on-terminal lighting and shoreside electric gantry cranes. These sources consume the majority of on-terminal electricity, and account for about 1 percent of overall Project GHG emissions. Therefore, implementation of power saving technology at the terminal could reduce overall Project GHG emissions by a fraction of 1 percent.

MM AQ-28: ***Solar Panels.*** **The applicant shall install solar panels on the main terminal building.**

Solar panels would provide the terminal building with a clean source of electricity to replace some of its fossil fuel-generated electricity use. Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

MM AQ-29: **Recycling. The tenant shall ensure a minimum of 40 percent of all waste generated in all terminal buildings is recycled by 2012 and 60 percent of all waste generated in all terminal buildings is recycled by 2015. Recycled materials shall include: (a) white and colored paper; (b) post-it notes; (c) magazines; (d) newspaper; (e) file folders; (f) all envelopes including those**

with plastic windows; (g) all cardboard boxes and cartons; (h) all metal and aluminum cans; (i) glass bottles and jars; and; (j) all plastic bottles.

In general, products made with recycled materials require less energy and raw materials to produce than products made with unrecycled materials. This savings in energy and raw material use translates into GHG emission reductions. The effectiveness of this mitigation measure was not quantified due to the lack of a standard emission estimation approach.

MM AQ-30: ***Tree Planting.*** **The applicant shall plant shade trees around the main terminal building, and the tenant shall maintain all trees through the life of the lease.**

Trees act as insulators from weather, thereby decreasing energy requirements. Onsite trees also provide carbon storage (AEP, 2007). Although not quantified, implementation of this measure is expected to reduce Project GHG emissions by less than 0.1 percent.

Future Portwide greenhouse gas emission reductions are also anticipated through AB 32 rule promulgation. However, such reductions have not yet been quantified because AB 32 implementation is still under development by the CARB.

Residual Impacts

Table 3.2-43 summarizes the annual GHG emissions that would occur within California from operation of the Berth 97-109 terminal project with mitigation. The effects of **MM AQ-9** (AMP for Ships), **MM AQ-10** (VSRP for ships), **MM AQ-17** (Yard Equipment), and **MM AQ-20** (LNG **Trucks)** were included in the emission estimates. The potential effects of the remaining GHG mitigation measures **(MM AQ-21 and MM AQ-25 through MM AQ-30)** are described qualitatively under each measure's heading, above.

Table 3.2-43. Annual Operational GHG Emissions – Mitigated Proposed Project

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	3,441	0.5	0.0	0	0	0	3,460
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	22,420	20.9	0.3	0	0	0	22,959
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	1,318	0.0	0.0	0	0	0	1,320.4
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**177,191**	**31.5**	**3.9**	**0.07**	**0.17**	**0.09**	**179,800**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457

Table 3.2-43. Annual Operational GHG Emissions – Mitigated Proposed Project

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Minus CEQA Baseline	**174,757**	**30.7**	**3.9**	**0.07**	**0.17**	**0.09**	**177,343**
NEPA Baseline	24,126	21	0	0	0	0	24,668
Project Minus NEPA Baseline	**153,065**	**10**	**4**	**0**	**0**	**0**	**155,133**
Project Year 2015							
Ships – Transit	25,623	3.5	0.3	0	0	0	25,775
Ships – Hoteling	3,204	0.5	0.1	0	0	0	3,223
Tugboats	603	0.1	0.0	0	0	0	606
Trucks	195,817	462.6	9.4	0	0	0	208,439
Trains	20,644	2.9	0.2	0	0	0	20,768
Rail Yard Equipment	4,415	0.0	0.1	0	0	0	4,432
Terminal Equipment	44,501	1.5	0.0	0	0	0	44,543
Reefer Refrigerant Losses	0	0.0	0.0	0.21	0.49	0.25	2,153
AMP Usage	4,340	0.0	0.0	0	0	0	4,346.6
On-Terminal Electricity Usage	1,827	0.0	0.0	0	0	0	1,830
Worker Trips	2,165	4.3	2.3	0	0	0	2,981
Total For Project Year 2015	**303,139**	**475.5**	**12.3**	**0.21**	**0.49**	**0.25**	**319,097**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**300,706**	**474.7**	**12.3**	**0.21**	**0.49**	**0.25**	**316,640**
NEPA Baseline	28,259	1	0	0	0	0	28,295
Project Minus NEPA Baseline	**274,880**	**474**	**12**	**0**	**0**	**0**	**290,803**
Project Year 2030							
Ships – Transit	34,728	4.8	0.3	0	0	0	34,934
Ships – Hoteling	3,575	0.5	0.1	0	0	0	3,596
Tugboats	775	0.1	0.0	0	0	0	779
Trucks	138,613	772.7	11.1	0	0	0	158,280
Trains	24,523	3.4	0.2	0	0	0	24,671
Rail Yard Equipment	5,568	0.0	0.1	0	0	0	5,589
Terminal Equipment	59,276	2.2	0.0	0	0	0	59,335
Reefer Refrigerant Losses	0	0.0	0.0	0.28	0.65	0.33	2,868
AMP Usage	5,000	0.0	0.0	0	0	0	5,007.8
On-Terminal Electricity Usage	1,934	0.0	0.0	0	0	0	1,937
Worker Trips	2,654	0.8	0.4	0	0	0	2,803
Total Project Year 2030	**276,644**	**784.6**	**12.3**	**0.3**	**0.7**	**0.3**	**299,800**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**274,211**	**784**	**12**	**0**	**1**	**0**	**297,343**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**248,354**	**784**	**12**	**0**	**1**	**0**	**271,473**
Project Year 2045							
Ships – Transit	34,728	4.8	0.3	0	0	0	34,934
Ships – Hoteling	3,575	0.5	0.1	0	0	0	3,596
Tugboats	775	0.1	0.0	0	0	0	779
Trucks	138,613	772.7	11.1	0	0	0	158,280
Trains	24,523	3.4	0.2	0	0	0	24,671

Table 3.2-43. Annual Operational GHG Emissions – Mitigated Proposed Project

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Rail Yard Equipment	5,568	0.0	0.1	0	0	0	5,589
Terminal Equipment	59,276	2.1	0.0	0	0	0	59,333
Reefer Refrigerant Losses	0	0.0	0.0	0.28	0.65	0.33	2,868
AMP Usage	5,000	0.0	0.0	0	0	0	5,007.8
On-Terminal Electricity Usage	1,934	0.0	0.0	0	0	0	1,937
Worker Trips	2,711	0.8	0.4	0	0	0	2,863
Total Project Year 2045	**276,702**	**785**	**12**	**0.3**	**0.7**	**0.3**	**299,859**
CEQA Baseline	2,433	0.8	0	0	0	0	2,457
Project Minus CEQA Baseline	**274,268**	**784**	**12.3**	**0.3**	**0.7**	**0.3**	**297,401**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**248,411**	**784**	**12**	**0**	**1**	**0**	**271,532**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a.

Table 3.2-43 shows that the mitigated Project's CO_2e emissions would remain greater than the CEQA and NEPA baseline levels for all project study years. Therefore, after mitigation, the Project's GHG impacts would remain significant under CEQA.

3.2.4.4 Alternatives: Impacts and Mitigation

Because the Phase I construction activities at the Berth 97-109 terminal have already been completed, the construction emissions associated with Phase I presented in Tables 3.2-18 (unmitigated) and 3.2-20 (mitigated) are common to all proposed Project alternatives. These tables show that the emissions from Phase I construction activities, both with and without mitigation, were significant for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA and NEPA. Phase I construction emissions for CO were also significant under CEQA, but less than significant under NEPA. In addition, dispersion modeling of mitigated Phase I construction emissions (Table 3.2-22) predicted significant offsite ambient concentrations for NO_2 (1-hour average) and PM_{10} (24-hour average).

The construction impacts described below for the each of the proposed Project alternatives focus on future (Phases II and III) construction activities that would be in addition to the Phase I activities. Therefore, the construction significance determinations for the alternatives, given below, are in addition to the Phase I impacts, which were already determined to be significant for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA; and significant for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under NEPA.

Operational impacts associated with the Project alternatives were directly quantified for Alternatives 1 through 7.

To assist in comparing the alternatives to one another, Table 3.2-44 provides a summary of the air quality significance determinations for the proposed Project and each alternative. The table shows the results by type of impact and pollutant, both before and after mitigation. The discussions of the impacts for each alternative are provided in the following sections.

3.2.4.4.1 Alternatives

3.2.4.4.1.1 Alternative 1 – No Project Alternative

Under the No Project Alternative (Alternative 1), no Port action or federal action would occur. The Port would take no further action to construct and develop additional backlands (other than the 72 acres that currently exist), the four existing A-frame cranes would be removed, and the existing wharves (Berths 100-102) would cease to be used for ship berthing and container loading and unloading operations. The operation of wharf-related components (A-frame cranes and wharves) at Berths 97-109 beyond those constructed prior to the court injunction and as allowed for in the ASJ would not occur.

The bridge constructed during Phase I would also be abandoned in place. USACE would not issue permits for dredge and fill actions needed for construction of wharves at Berths 100 (south expansion) and 102. Fill activities associated with the separately approved Channel Deepening Project would continue until completion.

Under the Alternative 1, the site would continue to operate as a container backlands area of 72 acres and cargo ships that currently berth and load/unload at the Berth 121-131 terminal (operated by Yang Ming Lines) would continue to do so. Some of these cargo containers would be transported by yard tractor to the Berth 97-109 Container Terminal where they would be unloaded and stored before transportation to their final destinations. Section 2.5.1.1 presents a comprehensive description of Alternative 1.

Alt 1 – Impact AQ-1: The No Project Alternative would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Construction of Phase II for this alternative would remove the four gantry cranes installed during Phase I. No additional construction of backlands would occur. Daily emissions for crane removal would be approximated by the Phase II emissions for *Crane Delivery and Installation (Phase II)* in Tables 3.2-18 and 3.2-20 because the same type of equipment is assumed to be used for both crane installation and crane removal. Without mitigation, emissions from crane removal would exceed the SCAQMD daily thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Detailed construction emission calculations of Alternative 1 are presented in Appendix E1.

Table 3.2-44. Comparison Of Air Quality Impacts Associated With Project Alternatives

Air Quality Impact	Without Mitigation								With Mitigation							
	PP	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	PP	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
CEQA Impacts																
AQ-1 Construction Emissions – Phases II, III																
VOC	S	-	-	S	S	NA	S	S	-	-	-	-	-	NA	-	S
CO	-	-	-	-	-	NA	-	-	-	-	-	-	-	NA	-	-
NO_X	S	S	S	S	S	NA	S	S	S	S	S	S	S	NA	S	S
SO_X	S	S	S	S	S	NA	S	S	S	S	S	S	S	NA	S	S
PM_{10}	S	S	S	S	S	NA	S	S	S	-	S	S	S	NA	S	S
$PM_{2.5}$	S	S	S	S	S	NA	S	S	S	S	S	S	S	NA	S	S
AQ-2 Construction Concentrations – Phases II, III																
CO	-	-	-	-	-	NA	-	-	-	-	-	-	-	NA	-	-
NO_X	S	-	-	S	S	NA	S	-	-	-	-	-	-	NA	-	-
PM_{10}	-	-	-	-	-	NA	-	-	-	-	-	-	-	NA	-	-
$PM_{2.5}$	-	-	-	-	-	NA	-	-	-	-	-	-	-	NA	-	-
AQ-3 Operational Emissions																
VOC	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
CO	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
NO_X	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	-
SO_X	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	-
PM_{10}	S	-	-	S	S	S	S	S	S	-	-	S	S	S	S	S
$PM_{2.5}$	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	-
AQ-4 Operational Concentrations																
CO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO_X	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	-
PM_{10}	S	-	S	S	S	S	S	S	S	-	S	S	S	S	S	S
$PM_{2,5}$	S	-	-	S	S	S	S	S	S	-	-	S	S	S	S	S
AQ-5 CO Hot Spots																
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ-6 Odors																
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3.2-44. Comparison Of Air Quality Impacts Associated With Project Alternatives

Air Quality Impact	Without Mitigation								With Mitigation							
	PP	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	PP	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
AQ-7 Toxic Air Contaminants																
Cancer Risk – Residential	S	-	-	S	S	S	S	-	S	-	-	-	S	-	S	-
Chronic Hazard Index – Residential	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acute Hazard Index – Residential	S	-	-	S	S	S	S	-	S	-	-	S	S	S	S	-
AQ-8 AQMP Consistency																
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ-9 GHG Emissions																
	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
NEPA Impacts																
AQ-1 Construction Emissions – Phases II, III																
VOC	-	NA	-	-	-	NA	-	S	-	NA	-	-	-	NA	-	S
CO	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-
NO_X	S	NA	S	S	S	NA	S	S	S	NA	S	S	S	NA	S	S
SO_X	S	NA	S	S	S	NA	S	S	S	NA	S	S	S	NA	S	S
PM_{10}	S	NA	-	S	S	NA	S	S	-	NA	-	-	-	NA	-	S
$PM_{2.5}$	S	NA	S	S	S	NA	S	S	S	NA	S	S	S	NA	S	S
AQ-2 Construction Concentrations – Phases II, III																
CO	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-
NO_X	S	NA	-	S	S	NA	S	-	-	NA	-	-	-	NA	-	-
PM_{10}	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-
$PM_{2.5}$	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-
AQ-3 Operational Emissions																
VOC	S	NA	-	S	S	S	S	S	S	NA	-	S	S	S	S	S
CO	S	NA	-	S	S	S	S	S	S	NA	-	S	S	S	S	S
NO_X	S	NA	S	S	S	S	S	S	S	NA	S	S	S	S	S	S
SO_X	S	NA	S	S	S	S	S	-	S	NA	S	S	S	S	S	-
PM_{10}	S	NA	-	S	S	S	S	S	S	NA	-	S	S	S	S	S

Table 3.2-44. Comparison Of Air Quality Impacts Associated With Project Alternatives

Air Quality Impact	Without Mitigation								With Mitigation							
	PP	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	PP	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
$PM_{2.5}$	S	NA	S	S	S	S	S	S	S	NA	S	S	S	S	S	S
AQ-4 Operational Concentrations																
CO	-	NA	-	-	-	-	-	-	-	NA	-	-	-	-	-	-
NO_X	S	NA	S	S	S	S	S	-	S	NA	S	S	S	S	S	-
PM_{10}	S	NA	-	S	S	S	S	S	S	NA	-	S	S	S	S	S
$PM_{2,5}$	S	NA	-	S	S	S	S	S	S	NA	-	S	S	S	S	S
AQ-5 CO Hot Spots																
	-	NA	-	-	-	-	-	-	-	NA	-	-	-	-	-	-
AQ-6 Odors																
	-	NA	-	-	-	-	-	-	-	NA	-	-	-	-	-	-
AQ-7 Toxic Air Contaminants																
Cancer Risk – Residential	S	NA	-	S	S	S	S	-	S	NA	-	-	S	-	S	-
Chronic Hazard Index – Residential	-	NA	-	-	-	-	-	-	-	NA	-	-	-	-	-	-
Acute Hazard Index – Residential	S	NA	-	S	S	S	S	-	S	NA	-	S	S	S	S	-
AQ-8 AQMP Consistency																
	-	NA	-	-	-	-	-	-	-	NA	-	-	-	-	-	-
AQ-9 GHG Emissions																
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

S Significant impact

\- Less than significant impact

PP Proposed Project

Notes:

1. There are no construction activities for Alternative 5 Phases II and III.
2. Alternative 1 does not require federal action; therefore, a NEPA significance evaluation is not necessary.
3. Alternatives 1 and 2 operations would not have mitigation; therefore, the operational impacts (AQ-3 through AQ-9) listed in the With Mitigation column are identical to the Without Mitigation column for Alternatives 1 and 2.
4. For **Impact AQ-3**, the significance determinations vary by study year (2005, 2010, 2015, 2030, and 2045). The impact is designated significant in this table if it is significant for any year, even if it is less than significant for some years.

CEQA Impact Determination

Alternative 1 exceeded the daily construction emission thresholds for VOC, CO, NO_X, SO_X, PM_{10} and $PM_{2.5}$ during Phase I construction, and would exceed the thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phase II crane removal activities without mitigation. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1**, **MM AQ-2**, **MM AQ-4**, and **MM AQ-5** would apply to Phase II crane-removal activities. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation, emissions from crane removal would be reduced to a less than significant level for PM_{10}. Emissions would continue to exceed SCAQMD daily thresholds for NO_X, SO_X, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant for NO_X, SO_X, and $PM_{2.5}$.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alt 1 – Impact AQ-2: Proposed Project construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Maximum daily on-terminal emissions from crane removal would be less than the maximum daily Phase II and III construction emissions from the proposed Project. Therefore, air quality concentrations of NO_X, CO, PM_{10}, and $PM_{2.5}$ from the crane removal would be less than the proposed Project.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_2 and PM_{10}.

Because the dispersion modeling analysis for unmitigated Phase II and III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, or $PM_{2.5}$ standards, the Phase II crane-removal activity for Alternative 1 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, the maximum 1-hour offsite ambient pollutant concentration of NO_2 associated with Phase II crane removal activities would also be less than the SCAQMD significance threshold. Therefore, CEQA impacts would be less than significant for all pollutants during Phase II of construction.

Mitigation Measures

To reduce the level of impact during construction, Mitigation Measure AQ-1 was applied to Phase I. Because Phase II impacts would be less than significant, mitigation is not required for Phase II crane removal.

Residual Impacts

For Phase I, the residual air quality impacts were temporary but significant for NO_X and PM_{10}.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alt 1 – Impact AQ-3: The No Project Alternative would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-16.

Under Alternative 1, operation of the 72-acre backlands at Berths 97-109 would continue. This alternative would not result in additional development beyond what currently exists. Because Berths 97-109 would have no active wharf with this alternative, all ships transporting Berth 97-109 containers would dock at the Berth 121-131 terminal.

Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal for Alternative 1, only terminal equipment emissions associated with moving containers back and forth between the two terminals were attributed to the Berth 97-109 backlands. Other emission sources – including ships, tugboats, trucks, locomotives, and employee trips – would continue to be associated with Berth 121-131 only and, therefore, were omitted from emission calculations for this alternative.

The operational emissions associated with this Alternative assume the following annual container volumes for Berths 97-109:

- 403,200 TEUs in 2005
- 432,000 TEUs in 2015
- 457,100 TEUs in 2030 and 2045

Alternative 1 assumes that the Settlement Agreement measures for cargo-handling equipment would be implemented, CAAP measure CHE-1 (Performance Standards for Cargo-Handling Equipment) would begin January 1, 2009, and all toppicks would be alternative-fueled starting in 2009. These measures are assumed to be equivalent to **MM AQ-15** in its entirety, and **MM AQ-17** without the requirement for electric RTGs. However, for Alternative 1 these measures are considered project elements rather than mitigation measures. Therefore, Alternative 1 impacts do not reflect unmitigated and mitigated scenarios, but rather reflect the elements described above as being part of Alternative 1.

Tables 3.2-45 and 3.2-46 show average and peak daily operations emissions, respectively, for Alternative 1. The average daily emissions represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day to day, depending on ship arrivals.

Table 3.2-45. Average Daily Operational Emissions With Mitigation – Alternative 1

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Terminal Equipment	183	2,701	1,074	4	20	19
Total – Project Year 2005	**183**	**2,701**	**1,074**	**4**	**20**	**19**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	123	2,476	508	-7	-12	-10
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
Project Year 2015						
Terminal Equipment	5	582	49	0	2	2
Total – Project Year 2015	**5**	**582**	**49**	**0**	**2**	**2**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	-55	357	-517	-10	-30	-27
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2030						
Terminal Equipment	6	643	55	0	2	2
Total – Project Year 2030	**6**	**643**	**55**	**0**	**2**	**2**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	-54	417	-511	-10	-29	-27
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2045						
Terminal Equipment	6	628	55	0	2	2
Total – Project Year 2045	**6**	**628**	**55**	**0**	**2**	**2**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	-54	402	-511	-10	-29	-27
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations for Alternative 1.

c) Alternative 1 emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-46. Peak Daily Operational Emissions – Alternative 1

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Terminal Equipment	492	7,268	2,890	11	53	50
Total – Project Year 2005	**492**	**7,268**	**2,890**	**11**	**53**	**50**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	331	6,662	1,367	-18	-32	-27
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
Project Year 2015						
Terminal Equipment	14	1,567	132	0	5	5
Total – Project Year 2015	**14**	**1,567**	**132**	**0**	**5**	**5**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	-148	960	-1,391	-28	-80	-73
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
Project Year 2030						
Terminal Equipment	16	1,729	148	1	6	6
Total – Project Year 2030	**16**	**1,729**	**148**	**1**	**6**	**6**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	-145	1,123	-1,375	-28	-79	-72
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
Project Year 2045						
Terminal Equipment	16	1,688	147	1	5	5
Total – Project Year 2045	**16**	**1,688**	**147**	**1**	**5**	**5**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	-146	1,082	-1,376	-28	-79	-73
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**

Notes:

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations for Alternative 1.

c) Alternative 1 emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The peak daily emissions assume terminal equipment activity equivalent to 2.7 times the average level of activity. As described in Section 3.2.4.3, this peaking factor reflects the maximum theoretical container movement rates on and off the Berth 97-109 terminal. The container movement rates are tied to the peak ship loading and unloading rates, peak on-dock train loading and unloading rates, and peak day container truck visits. However, because the Berth 97-109 terminal would have no *directly* associated wharf, gate, or on-dock rail throughput under No Project conditions, it was necessary to derive a peaking factor from activity level assumptions for the proposed Project. The peaking factor of 2.7 represents the average peaking factor from all proposed Project analysis years. This factor was assumed to be representative of peak day No Project conditions.

Both tables show that emissions would notably decrease between 2005 and 2015 as CAAP measures are implemented and then increase slightly as cargo equipment engines age.

Table 3.2-47 shows the combined total of construction and operational emissions for year 2010 during which construction (in this case, crane removal) and operation activities would occur simultaneously. The sharp emissions increase from 2005 to 2010 is due to the use of propane yard tractors that were part of the Settlement Agreement and which are not subject to the same CARB standards as diesel engines.

Table 3.2-47. Peak Daily 2010 Construction and Operational Emissions – Alternative 1

	Peak Daily Emissions (lb/day)					
Project Year 2010	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Crane Removal	36.5	97	1,039	1,208	125	101
Worker Trips	2.15	27	4	0.02	5	1
Maximum Daily Construction Emissions	**39**	**124**	**1,043**	**1,208**	**130**	**101**
Operation						
Terminal Equipment	729	13,456	2,770	0	47	45
Maximum Daily Emissions – Operation	**729**	**13,456**	**2,770**	**0**	**47**	**45**
Total – Construction & Operation – Project Year 2010	**768**	**13,580**	**3,813**	**1,208**	**177**	**146**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**607**	**12,973**	**2,290**	**1,180**	**92**	**68**
Thresholds [c]	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**

[a] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[b] The CEQA Impact equals total Alternative 1 construction plus operational emissions minus CEQA baseline emissions.

[c] The SCAQMD operational thresholds are used in the significance determinations.

CEQA Impact Determination

From a CEQA perspective, Alternative 1 peak daily emissions would exceed CEQA baseline emissions for VOC, CO and NO_X in 2005. In 2015, 2030, and 2045 the peak daily emissions would exceed CEQA baseline emissions for CO only. The air quality impacts associated with Alternative 1 would be significant for VOC, CO, and NO_X in 2005 and for CO in 2015, 2030, and 2045. The 10 ton/year VOC threshold would be exceeded in 2005.

The year 2010 was chosen as the year that best represents a time when construction and operation overlap. During this year, VOC, CO NO_X, SO_X, and $PM_{2.5}$ are expected to exceed CEQA baseline emissions and impacts would be significant.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 during proposed Project operations because this alternative would not introduce new uses to Berths 97-109. Mitigation measures **MM AQ-1**, **MM AQ-2**, **MM AQ-4**, and **MM AQ-5** would be applied for any construction as discussed in **Impact AQ-1**.

Residual Impacts

From a CEQA perspective, the air quality impacts associated with Alternative 1 would be significant for VOC, CO, and NO_X in 2005; for VOC, CO NO_X, SO_X, and $PM_{2.5}$ in 2010; and for CO in 2015, 2030, and 2045.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alt 1 – Impact AQ-4: No Project Alternative operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Dispersion modeling of onsite and offsite operational emissions was performed to assess the impact of Alternative 1 on local ambient air concentrations. Construction emissions were added to the operational emissions in the model during the periods where construction emissions overlap with operations. Tables 3.2-48 and 3.2-49 present a summary of the maximum offsite concentrations of NO_2, CO, PM_{10} and $PM_{2.5}$ associated with operation of Alternative 1.

The data in Table 3.2-48 show that the maximum 1-hour concentration of NO_2 is predicted to be 1,131 $\mu g/m^3$, which exceeds the 1-hour SCAQMD concentration threshold. The maximum annual NO_2 concentration of 82 $\mu g/m^3$ would exceed the annual NO_2 threshold.

The maximum offsite 1-hour and 8-hour CO concentrations associated with operation of Alternative 1 would be well below the SCAQMD significance thresholds.

The 24-hour PM_{10} CEQA incremental concentration is predicted to be 1.5 $\mu g/m^3$. The CEQA increment would not exceed the SCAQMD significance threshold of 2.5 $\mu g/m^3$.

The 24-hour $PM_{2.5}$ CEQA incremental concentration is predicted to be 1.5 $\mu g/m^3$. The CEQA increment would not exceed the SCAQMD significance threshold of 2.5 $\mu g/m^3$.

Table 3.2-48. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 1

Pollutant	Averaging Time	Maximum Modeled Concentration of No Project ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	868	263	**1,131**	338
	Annual	30	52.7	**82**	56
CO	1-hour	5,392	4,809	10,201	23,000
	8-hour	1,387	4,008	5,395	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2003, 2004, and 2005 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-49. Maximum Offsite PM_{10} Concentrations Associated with Operation of Alternative 1

	Maximum Modeled Concentration of No Project ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment [c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10} 24-hour	3.7	10.2	1.5	2.5
$PM_{2.5}$ 24-hour	3.6	9.4	1.5	2.5

Notes:

a. Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b. The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the No Project concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c. The CEQA Increment represents No Project minus CEQA baseline. The NEPA significant finding is not necessary for Alternative 1.

d. Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with the operation of Alternative 1 would be significant for NO_2 (1-hour and annual average) but not CO, PM_{10}, or $PM_{2.5}$. Therefore, significant impacts under CEQA would occur for NO_2.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 during operations because this alternative would not introduce new uses to Berths 97-109. Mitigation Measures **MM AQ-1**, **MM AQ-2**, **MM AQ-4**, and **MM AQ-5** would be applied for any construction as discussed in **Impact AQ-1**.

Residual Impacts

Maximum offsite ambient pollutant concentrations would be significant for NO_2 under CEQA.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alt 1 – Impact AQ-5: The proposed Project would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

Alternative 1 would not generate any new truck trips, because it would serve only as additional container storage for the Berth 121-131 terminal, and because capacity of the Berth 121-131 terminal is berth limited, not backlands limited. Therefore, Alternative 1 would not generate any exceedances of the CO standards near a roadway intersection.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

No mitigation is required for Alternative 1.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alt 1 – Impact AQ-6: The proposed Project would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with Alternative 1 would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 1.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alt 1 – Impact AQ-7: Alternative 1 would not expose receptors to significant levels of toxic air contaminants.

The main source of TACs from Alternative 1 operations would be DPM emissions from terminal equipment. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2004 through 2073. An HRA was performed over this 70-year exposure period**.**

Table 3.2-50 presents the maximum predicted health impacts associated with this Alternative. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for this Alternative, CEQA baseline, and CEQA increment (Alternative 1 minus CEQA baseline).

Table 3.2-50. Maximum Health Impacts Associated With Alternative 1, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact			Significance Threshold
		Alternative 1	CEQA Baseline	CEQA Increment	
Cancer Risk	Residential	8.6×10^{-6} (8.6 in a million)	14×10^{-6} (14 in a million)	0.3×10^{-6} (0.3 in a million)	10×10^{-6} 10 in a million
	Occupational	7.1×10^{-6} (7.1 in a million)	11×10^{-6} (11 in a million)	4.6×10^{-6} (4.6 in a million)	
	Sensitive	1.7×10^{-6} (1.7 in a million)	2.3×10^{-6} (2.3 in a million)	0.1×10^{-6} (0.1 in a million)	
	Student	0.05×10^{-6} (0.05 in a million)	0.1×10^{-6} (0.1 in a million)	0.003×10^{-6} (0.003 in a million)	
	Recreational	10×10^{-6} (10 in a million)	18×10^{-6} (18 in a million)	2.2×10^{-6} (2.2 in a million)	

Table 3.2-50. Maximum Health Impacts Associated With Alternative 1, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact			Significance Threshold
		Alternative 1	CEQA Baseline	CEQA Increment	
Chronic Hazard Index	Residential	0.11	0.14	0.01	1.0
	Occupational	0.34	0.43	0.24	
	Sensitive	0.02	0.02	0.00	
	Student	0.02	0.02	0.00	
	Recreational	0.31	0.43	0.10	
Acute Hazard Index	Residential	0.25	0.13	0.16	1.0
	Occupational	0.33	0.22	0.28	
	Sensitive	0.13	0.04	0.11	
	Student	0.13	0.04	0.09	
	Recreational	0.31	0.22	0.21	

Notes:
a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA increment only.
b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.
c) The CEQA increment represents Alternative 1 minus CEQA baseline.
d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.
e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.
f) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

CEQA Impact Determination

Table 3.2-50 shows that the maximum CEQA cancer risk increment associated with Alternative 1 is predicted to be 4.6 in a million (4.6×10^{-6}), at an occupational receptor. This risk value is below the significance criterion of 10 in a million. The maximum chronic and acute hazard index increments associated with Alternative 1 are also predicted to be less than significant for all receptors. Therefore, the human health risk values associated with operation of Alternative 1 would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant under CEQA.

Table 3.2-51 presents results of the 2009-2078 HRA. The results are provided for information purposes only and were not used to determine significance. The 2009-2078 HRA results indicate that the Settlement Agreement measures, CAAP measure CHE-1, and alternative fueled toppicks starting in 2009 would further reduce the maximum cancer risk values associated with Alternative 1 compared to 2004-2073 HRA levels.

Table 3.2-51. Maximum Health Impacts Associated With Alternative 1, 2009-2078

Health Impact	Receptor Type	Maximum Predicted Impact			Significance Threshold
		Alternative 1	CEQA Baseline	CEQA Increment	
Cancer Risk	Residential	2.9×10^{-6} (2.9 in a million)	14×10^{-6} (14 in a million)	-0.03×10^{-6} (-0.03 in a million)	
	Occupational	2.4×10^{-6} (2.4 in a million)	11×10^{-6} (11 in a million)	0.6×10^{-6} (0.6 in a million)	
	Sensitive	0.6×10^{-6} (0.6 in a million)	2.3×10^{-6} (2.3 in a million)	-0.03×10^{-6} (-0.03 in a million)	10×10^{-6} 10 in a million
	Student	0.02×10^{-6} (0.02 in a million)	0.1×10^{-6} (0.1 in a million)	-0.001×10^{-6} (-0.001 in a million)	
	Recreational	3.4×10^{-6} (3.4 in a million)	18×10^{-6} (18 in a million)	-0.01×10^{-6} (-0.01 in a million)	

Notes:

a) The 2009-2078 HRA is for informational purposes only. It shows the risks that would occur over a 70-year exposure period starting in 2009, the first year that the Port is able to implement a wide array of mitigation measures.

b) Exceedances of the significance criteria are in bold. The significance thresholds apply to the CEQA increment only.

c) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

d) The CEQA increment represents Alternative 1 minus CEQA baseline.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

g) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alt 1 – Impact AQ-8: The proposed Project would not conflict with or obstruct implementation of an applicable AQMP.

This alternative would comply with SCAQMD rules and regulations and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

The proposed Project would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 1.

Residual Impacts

No residual impacts would occur.

NEPA Impact Determination

The impacts of the No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Alternative 1 – Impact AQ-9: Alternative 1 would produce GHG emissions that would exceed CEQA baseline

Table 3.2-52 summarizes the total GHG construction emissions associated with Alternative 1. Table 3.2-53 summarizes the annual GHG emissions that would occur in California from the operation of Alternative 1.

Table 3.2-52. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 1

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.2	0.0	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100[b]	840	0.1	0.0	846
Crane Delivery and Installation	87	0.0	0.0	87
Berth 100 72-Acre Backlands Development	619	0.1	0.0	623
Construction of Bridge 1	33	0.0	0.0	34
Berth 121 Gate Modifications	29	0.0	0.0	29
Worker Trips	1,025	0.2	0.1	1,073
Phase II				
Crane Removal	153	0.0	0.0	154
Worker Trips	833	0.2	0.1	880
Total Emissions	**4,912**	**1**	**0**	**5,028**
CEQA Impact[e]	**4,912**	**1**	**0**	**5,028**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero.

Table 3.2-53. Annual Operational GHG Emissions – Alternative 1 (No Project Alternative)

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Terminal Equipment	19,857	2	0	0	0	0	19,970
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Total For Project Year 2005	**21,563**	**2**	**0**	**0.00**	**0.00**	**0.00**	**21,678**
CEQA baseline	2,433	1	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA baseline	**19,130**	**1.2**	**0**	**0.00**	**0.00**	**0.00**	**19,221**
Project Year 2015							
Terminal Equipment	21,276	0	0	0	0	0	21,359
On-Terminal Electricity Usage	1,827	0	0	0	0	0	1,830
Total For Project Year 2015	**23,103**	**0**	**0**	**0**	**0**	**0**	**23,190**
CEQA baseline	2,433	1	0	0.0	0.0	0.0	2,457
Project Minus CEQA baseline	**20,670**	**0**	**0**	**0**	**0**	**0**	**20,732**
Project Year 2030							
Terminal Equipment	22,512	0	0	0	0	0	22,596
On-Terminal Electricity Usage	1,934	0	0	0	0	0	1,937
Total Project Year 2030	**24,445**	**0**	**0**	**0**	**0**	**0**	**24,533**
CEQA baseline	2,433	1	0	0.0	0.0	0.0	2,457
Project Minus CEQA baseline	**22,012**	**-1**	**0**	**0**	**0**	**0**	**22,075**
Project Year 2045							
Terminal Equipment	22,512	0	0	0	0	0	22,596
On-Terminal Electricity Usage	1,934	0	0	0	0	0	1,937
Total Project Year 2045	**24,445**	**0**	**0**	**0**	**0**	**0**	**24,533**
CEQA baseline	2,433	1	0	0.0	0.0	0.0	2,457
Project Minus CEQA baseline	**22,012**	**-1**	**0**	**0**	**0**	**0**	**22,075**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP).

c) The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1300 for HFC-134a; and 3800 for HFC-143a

CEQA Impact Determination

Table 3.2-52 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, Table 3.2-53 shows that in each future Project year, annual operational CO_2e emissions would increase relative to the CEQA baseline. These increases are considered a significant impact under CEQA.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 during No Project operations because this alternative would not introduce new uses to Berths 97-109.

Residual Impacts

Significant impacts would remain under CEQA.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

3.2.4.4.1.2 Alternative 2 – No Federal Action

The No Federal Action Alternative (Alternative 2) includes the construction and operational impacts likely to occur absent USACE permits (i.e., air emissions and traffic likely to occur without issuance of permits to modify wharves or dredge). Under Alternative 2, there would be a Port action to further develop backlands at the Project site, which does not require a federal action. Alternative 2 would allow construction and operation of all upland elements, but the LAHD would take no actions necessary to accommodate wharf operations. Rather, the four existing A-frame cranes would be removed and the existing wharves (Berths 100-102) would not be used for container loading and unloading activities. Section 2.5.1.2 presents a comprehensive description of Alternative 2.

Alt 2 – Impact AQ-1: The No Federal Action Alternative would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Construction of Phase II of the No Federal Action Alternative would include the backland construction activities of Phase II of the proposed Project, plus crane removal. In addition, the 25 acres of backlands in Phase III would not be constructed; consequently, there would be no Phase III activities for Alternative 2.

Without mitigation, emissions from Alternative 2 Phase II construction activities would exceed the SCAQMD daily thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA, and would exceed the thresholds of NO_X, SO_X, and $PM_{2.5}$ under NEPA, resulting in a significant impact. Detailed construction emission calculations of Alternative 2 are presented in Appendix E1.

CEQA Impact Determination

Alternative 2 exceeded the daily construction emission thresholds for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phase I construction, and would exceed the thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phase II activities without mitigation. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phase II. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation and compliance with SCAQMD Rule 403, emissions from Alternative 2 Phase II would continue to exceed SCAQMD daily thresholds for $NO_{X,}$ $SO_{X,}$ PM_{10}, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant.

NEPA Impact Determination

The construction activities for Alternative 2 that go beyond the NEPA baseline include wharf construction, crane delivery, bridge construction, and Berth 121 gate modifications in Phase I; and crane removal in Phase II. Alternative 2 exceeded the daily construction emission thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phase I construction, and would exceed the thresholds for NO_X, SO_X, and $PM_{2.5}$ during Phase II activities without mitigation. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation and compliance with SCAQMD Rule 403, emissions from Alternative 2 Phase II would continue to exceed SCAQMD daily thresholds for $NO_{X,}$ $SO_{X,}$ and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant.

Alt 2 – Impact AQ-2: The No Federal Action Alternative construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Maximum daily Phase II construction emissions from Alternative 2 would be less than the maximum daily Phase II and III construction emissions from the proposed Project. Therefore, air quality concentrations of NO_X, CO, PM_{10}, and $PM_{2.5}$ from the crane removal would be less than the proposed Project.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

Because the dispersion modeling analysis for unmitigated Phase II and III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ standards, the Phase II activity for Alternative 2 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum 1-hour offsite ambient pollutant concentrations of NO_2 associated with Alternative 2 Phase II activities would be less than the SCAQMD significance thresholds. Therefore, CEQA impacts would be less than significant for all pollutants during Phase II of construction.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, offsite ambient concentrations from Phase I construction activities remained significant for NO_X and PM_{10}. However, offsite ambient concentrations from Phase II construction activities would be below the significance threshold for all pollutants.

Residual Impacts

The residual air quality impacts would be temporary but significant for NO_X and PM_{10} in Phase I only.

NEPA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

Because the dispersion modeling analysis for unmitigated Phases II and III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ standards, the Phase II activity for Alternative 2 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum 1-hour offsite ambient pollutant concentrations of NO_2 associated with Alternative 2 Phase II activities would be less than the SCAQMD significance thresholds. Therefore, NEPA impacts would be less than significant for all pollutants during Phase II of construction.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, offsite ambient concentrations from Phase I construction activities remained significant for NO_X and PM_{10}. However, offsite ambient concentrations from Phase II construction activities would be below the significance threshold for all pollutants.

Residual Impacts

The residual air quality impacts would be temporary but significant for NO_X and PM_{10} in Phase I only.

Alt 2 – Impact AQ-3: The No Federal Action Alternative would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-16.

Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal for Alternative 2, only terminal equipment emissions associated with moving containers back and forth between the two terminals were attributed to the Berth 97-109 backlands. Other emission sources – including ships, tugboats, trucks, locomotives, and employee trips – would continue to be associated with Berth 121-131 only and therefore were omitted from the emission calculations for this alternative.

The operational emissions associated with this alternative assume the following activity levels:

- Annual container volumes for Berths 97-109 are estimated to be 403,200 TEUs in 2005; 631,800 TEUs in 2015; and 632,500 TEUs in 2030 and 2045

Alternative 2 assumes that the Settlement Agreement measures for cargo-handling equipment would be implemented, CAAP measure CHE-1 (Performance Standards for Cargo-Handling Equipment) would begin January 1, 2009, and all toppicks would be alternative-fueled starting in 2009. These measures are assumed to be equivalent to **MM AQ-15** in its entirety, and **MM AQ-17** without the requirement for electric RTGs. However, for Alternative 2 these measures are considered project elements rather than mitigation measures. Therefore, Alternative 2 impacts do not reflect unmitigated and mitigated scenarios, but rather reflect the elements described above as being part of Alternative 2.

Tables 3.2-54 and 3.2-55 show average and peak daily operational emissions, respectively, for Alternative 2. Since Alternative 2 is equivalent to the NEPA baseline for project operations, the methodology for calculating Alternative 2 emissions is described in Section 3.2.4.1, NEPA Impact Determination.

Both tables show that emissions would notably decrease between 2005 and 2015 as CAAP measures are implemented and then increase slightly as cargo equipment engines age. The emissions increase from 2005 to 2010 is due to the use of propane yard tractors that were part of the Settlement Agreement and which are not subject to the same CARB standards as diesel engines.

Due to a lengthy Phase II construction period, operational activities would overlap with construction. Table 3.2-56 shows the combined total of construction and operational emissions for 2010, during which year construction and operation activities would occur simultaneously.

Table 3.2-54. Average Daily Operational Emissions – Alternative 2

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Terminal Equipment	183	2,701	1,074	4	20	19
Total – Project Year 2005	**183**	**2,701**	**1,074**	**4**	**20**	**19**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	123	2,476	508	-7	-12	-10
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2015						
Terminal Equipment	7	852	72	0	3	3
Total – Project Year 2015	**7**	**852**	**72**	**0**	**3**	**3**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	-52	626	-494	-10	-29	-26
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2030						
Terminal Equipment	8	889	76	0	3	3
Total – Project Year 2030	**8**	**889**	**76**	**0**	**3**	**3**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	-52	664	-490	-10	-29	-26
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55

Table 3.2-54. Average Daily Operational Emissions – Alternative 2

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2045						
Terminal Equipment	8	868	75	0	3	3
Total – Project Year 2045	**8**	**868**	**75**	**0**	**3**	**3**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	-52	643	-491	-10	-29	-26
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations for Alternative 2.

c) Alternative 2 emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-55. Peak Daily Operational Emissions – Alternative 2

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Terminal Equipment	492	7,268	2,890	11	53	50
Total – Project Year 2005	**492**	**7,268**	**2,890**	**11**	**53**	**50**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	331	6,662	1,367	-18	-32	-27
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2015						
Terminal Equipment	20	2,291	193	1	7	7
Total – Project Year 2015	**20**	**2,291**	**193**	**1**	**7**	**7**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	-141	1,685	-1,330	-28	-78	-71
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2030						
Terminal Equipment	22	2,393	205	1	8	8
Total – Project Year 2030	**22**	**2,393**	**205**	**1**	**8**	**8**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	-139	1,786	-1,318	-28	-77	-70
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55

Table 3.2-55. Peak Daily Operational Emissions – Alternative 2

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2045						
Terminal Equipment	22	2,336	203	1	7	7
Total – Project Year 2045	**22**	**2,336**	**203**	**1**	**7**	**7**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	-140	1,729	-1,320	-28	-77	-71
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Because the Berth 97-109 terminal would be used as overflow backlands for the Berth 121-131 terminal, only terminal equipment emissions were attributed to the Berth 97-109 terminal operations for Alternative 2.

c) Alternative 2 emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-56. Peak Daily 2010 Construction and Operational Emissions – Alternative 2

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Construct 18 of 45-acre Backlands	11	51	113	0	22	6
Crane Removal	36	97	1,039	1,208	125	101
Worker Trips	2	27	4	0.02	5	1
Maximum Daily Construction Emissions	**50**	**176**	**1,155**	**1,208**	**152**	**108**
Operation						
Terminal Equipment	870	16,060	3,306	1	56	54
Maximum Daily Emissions – Operation	**870**	**16,060**	**3,306**	**1**	**56**	**54**
Total – Construction & Operation – Project Year 2010	**920**	**16,236**	**4,461**	**1,209**	**208**	**162**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**759**	**15,629**	**2,938**	**1,181**	**123**	**84**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**26**	**49**	**929**	**1,208**	**113**	**96**
Thresholds [d]	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**
NEPA Significant?	**No**	**No**	**Yes**	**Yes**	**No**	**Yes**

Note:

[a] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[b] The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

[c] NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

[d] The SCAQMD operational thresholds are used in the significance determinations.

CEQA Impact Determination

From a CEQA perspective, Alternative 2 peak daily emissions would exceed CEQA baseline emissions for VOC, CO and NO_X in 2005. In 2015, 2030 and 2045 the peak daily emissions would exceed CEQA baseline emissions for CO only. The 10 ton/year VOC threshold would be exceeded in 2005.

The air quality impacts associated with Alternative 2 would be significant for VOC, CO, and NO_X in 2005 and for CO in 2015, 2030, and 2045.

The year 2010 was chosen as the year that best represents a time when construction and operation overlap. During this year, Alternative 2 would emissions would exceed SCAQMD daily emission thresholds for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ and impacts would be significant for those pollutants.

Mitigation Measures

Mitigation measures are not applicable to Alternative 2 for operation. **MMAQ-1** would be applied to Phase I construction. **MM AQ-1** through **MM AQ-8** would be applied for construction during Phase II as discussed in **Impact AQ-1**.

Residual Impacts

From a CEQA perspective, the air quality impacts associated with Alternative 2 would be significant for VOC, CO, and NO_X in 2005; VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2010; and for CO in 2015, 2030, and 2045.

NEPA Impact Determination

From a NEPA perspective, Alternative 2 peak daily operational emissions would be equal to NEPA baseline operational emissions for all project study years. As a result, Alternative 2 would have no NEPA impact for project operations.

The year 2010 was chosen as the year that best represents a time when construction and operation overlap. During this year, combined construction and operational emissions for Alternative 2 would exceed NEPA baseline construction and operational emissions for all pollutants. The increase in emissions over NEPA baseline would be significant for NO_X, SO_X, and $PM_{2.5}$ in 2010.

Mitigation Measures

Mitigation measures are not applicable to Alternative 2 for operation. **MM AQ-1** would be applied to Phase I construction. **MM AQ-1** through **MM AQ-8** would be applied for construction during Phase II as discussed in **Impact AQ-1**.

Residual Impacts

From a NEPA perspective, there would be no air quality impacts associated with Alternative 2 operational emissions. The impact from combined construction and operational emissions in 2010 would be significant for NO_X, SO_X, and $PM_{2.5}$.

Alt 2 – Impact AQ-4: The No Federal Action Alternative operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Dispersion modeling of onsite and offsite operational emissions was performed to assess the impact of Alternative 2 on local ambient air concentrations. Construction emissions were added to the operational emissions in the model during the periods where construction emissions overlap with operations. Tables 3.2-57 and 3.2-58 present a summary of the maximum offsite concentrations of NO_2, CO, PM_{10} and $PM_{2.5}$ associated with operation of Alternative 2.

The data in Table 3.2-57 show that the maximum 1-hour concentration of NO_2 is predicted to be 1,225 $\mu g/m^3$, which exceeds the 1-hour SCAQMD concentration threshold. The maximum annual NO_2 concentration of 86 $\mu g/m^3$ would exceed the annual NO_2 threshold.

Table 3.2-57. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 2

Pollutant	Averaging Time	Maximum Modeled Concentration of Alternative 2 (µg/m^3)	Background Concentration (µg/m^3)	Total Ground Level Concentration (µg/m^3)	SCAQMD Threshold (µg/m^3)
NO_2 [c]	1-hour	962	263	**1,225**	338
	Annual	32.8	52.7	**85.5**	56.4
CO	1-hour	5,976	4,809	10,785	23,000
	8-hour	1,495	4,008	5,503	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-58. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of Alternative 2

	Maximum Modeled Concentration of Mitigated Alternative 2 (µg/m^3)	Maximum Modeled Concentration of CEQA Baseline (µg/m^3)	Maximum Modeled Concentration of NEPA Baseline (µg/m^3)	Ground Level Concentration CEQA Increment (µg/m^3)	Ground Level Concentration NEPA Increment (µg/m^3)	SCAQMD Threshold (µg/m^3)
PM_{10} 24-hour	5.8	10.2	5.7	**2.7**	0.8	2.5
$PM_{2.5}$ 24-hour	3.9	9.4	3.8	1.4	0.7	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the No Project concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents project minus CEQA baseline. The NEPA Increment represents project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

The maximum offsite 1-hour and 8-hour CO concentrations associated with operation of Alternative 2 would be well below the SCAQMD significance thresholds.

The 24-hour PM_{10} CEQA and NEPA incremental concentrations are predicted to be 2.7 and 0.8 µg/m^3, respectively. The CEQA increment would exceed the SCAQMD significance threshold of 2.5 µg/m^3. The NEPA increment would not exceed the SCAQMD threshold of 2.5 µg/m^3.

The 24-hour $PM_{2.5}$ CEQA and NEPA incremental concentration are predicted to be 1.4 and 0.7 µg/m^3, respectively. The CEQA increment would not exceed the SCAQMD significance threshold of 2.5 µg/m^3. The NEPA increment would not exceed the SCAQMD threshold of 2.5 µg/m^3.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with the operation of Alternative 2 would be significant for NO_2 (1-hour and annual average) and PM_{10} (24-hour average). Therefore, significant impacts under CEQA would occur.

Mitigation Measures

Mitigation measures are not applicable to Alternative 2 during operations because this alternative would not introduce new uses to Berths 97-109 for operation. **MM AQ-1** would be applied to Phase I construction. **MM AQ-1** through **MM AQ-8** would be applied for construction during Phase II as discussed in **Impact AQ-1**.

Residual Impacts

Maximum offsite ambient pollutant concentrations would be significant for NO_2 and PM_{10} under CEQA.

NEPA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2 (1-hour and annual). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures are not applicable to Alternative 2 during operations because this alternative would not introduce new uses to Berths 97-109 for operation. **MM AQ-1** would be applied to Phase I construction. **MM AQ-1** through **MM AQ-8** would be applied for construction during Phase II as discussed in **Impact AQ-1**.

Residual Impacts

Maximum offsite concentrations would be significant for NO_2 (1-hour and annual) under NEPA.

Alt 2 – Impact AQ-5: The No Federal Action Alternative would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

Alternative 2 would not generate any new truck trips because it would serve only as additional container storage for the Berth 121-131 terminal. Therefore, Alternative 2 would not generate any exceedances of the CO standards near a roadway intersection.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

Mitigation is not required.

Residual Impacts

No residual impacts would occur.

NEPA Impact Determination

Under this alternative, no development would occur in the in-water area (i.e., no dredging, dike or fill placement, pile installation, or wharf construction). In addition, backland development under Alternative 2 would be the same as the NEPA baseline. Therefore, potential impacts under NEPA would not occur because there would be no net change in the environmental conditions between Alternative 2 and the NEPA baseline during project operations.

Mitigation Measures

No mitigation measures are necessary under NEPA.

Residual Impacts

No residual impacts would occur.

Alt 2 – Impact AQ-6: The No Federal Action Alternative would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with Alternative 2 would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 2.

Residual Impacts

No residual impacts would occur.

NEPA Impact Determination

Under this alternative, no development would occur in the in-water area (i.e., no dredging, dike or fill placement, pile installation, or wharf construction). In addition, backland development under Alternative 2 would be the same as the NEPA baseline. Therefore, potential impacts under NEPA would not occur because there would be no net change in the environmental conditions between Alternative 2 and the NEPA baseline during project operations.

Mitigation Measures

No mitigation measures are necessary under NEPA.

Residual Impacts

No residual impacts would occur.

Alt 2 – Impact AQ-7: The No Federal Action Alternative would not expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 2 operations would be DPM emissions from terminal equipment. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2004 through 2073. An HRA was performed over this 70-year exposure period.

Table 3.2-59 presents the maximum predicted health impacts associated with this alternative. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for this alternative, the CEQA baseline, the CEQA increment (alternative minus CEQA baseline), the NEPA baseline, the NEPA increment (alternative minus NEPA baseline).

Table 3.2-59. Maximum Health Impacts Associated with Alternative 2, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 2	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	9.1×10^{-6} (9.1 in a million)	14×10^{-6} (14 in a million)	0.4×10^{-6} (0.4 in a million)	9.1×10^{-6} (9.1 in a million)	0.005×10^{-6} (0.005 in a million)	10×10^{-6} 10 in a million
	Occupational	7.5×10^{-6} (7.5 in a million)	11×10^{-6} (11 in a million)	3.3×10^{-6} (3.3 in a million)	7.5×10^{-6} (7.5 in a million)	0.01×10^{-6} (0.01 in a million)	
	Sensitive	2.1×10^{-6} (2.1 in a million)	2.3×10^{-6} (2.3 in a million)	0.2×10^{-6} (0.2 in a million)	2.1×10^{-6} (2.1 in a million)	0.005×10^{-6} (0.005 in a million)	
	Student	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.004×10^{-6} (0.004 in a million)	0.1×10^{-6} (0.1 in a million)	0.0001×10^{-6} (0.0001 in a million)	
	Recreational	9.9×10^{-6} (9.9 in a million)	18×10^{-6} (18 in a million)	1.5×10^{-6} (1.5 in a million)	9.9×10^{-6} (9.9 in a million)	0.003×10^{-6} (0.003 in a million)	

Table 3.2-59. Maximum Health Impacts Associated with Alternative 2, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 2	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Chronic Hazard Index	Residential	0.12	0.14	0.01	0.12	0.00	1.0
	Occupational	0.39	0.43	0.20	0.39	0.00	
	Sensitive	0.03	0.02	0.01	0.03	0.00	
	Student	0.03	0.02	0.01	0.03	0.00	
	Recreational	0.33	0.43	0.09	0.33	0.00	
Acute Hazard Index	Residential	0.24	0.13	0.15	0.24	0.05	1.0
	Occupational	0.38	0.22	0.25	0.38	0.07	
	Sensitive	0.15	0.04	0.11	0.14	0.04	
	Student	0.15	0.04	0.11	0.14	0.04	
	Recreational	0.34	0.22	0.19	0.34	0.07	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents project minus CEQA baseline. The NEPA increment represents project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

CEQA Impact Determination

Table 3.2-59 shows that the maximum CEQA cancer risk increment associated with Alternative 2 is predicted to be 3.3 in a million (3.3×10^{-6}), at an occupational receptor. This risk value is below the significance criterion of 10 in a million. The maximum chronic and acute hazard index increments associated with Alternative 2 are also predicted to be less than significant for all receptors.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant under CEQA.

NEPA Impact Determination

Table 3.2-59 shows that the maximum NEPA cancer risk increment associated with Alternative 2 is predicted to be 0.01 in a million (0.01×10^{-6}), at an occupational receptor. This risk value is below the significance criterion of 10 in a million. The maximum chronic and acute hazard index increments associated with Alternative 2 are also predicted to be less than significant for all receptors.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant under NEPA.

Table 3.2-60 presents results of the 2009-2078 HRA. The results are provided for information purposes only and were not used to determine significance. The 2009-2078 HRA results indicate that the Settlement Agreement measures, CAAP measure CHE-1, and alternative fueled toppicks starting in 2009 would further reduce the maximum cancer risk values associated with Alternative 2 compared to 2004-2073 HRA levels.

Table 3.2-60. Maximum Health Impacts Associated With Alternative 2, 2009-2078

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 2	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	3.6×10^{-6} (3.6 in a million)	14×10^{-6} (14 in a million)	-0.02×10^{-6} (-0.02 in a million)	3.6×10^{-6} (3.6 in a million)	0.005×10^{-6} (0.005 in a million)	10×10^{-6} 10 in a million
	Occupational	3.0×10^{-6} (3.0 in a million)	11×10^{-6} (11 in a million)	0.5×10^{-6} (0.5 in a million)	3.0×10^{-6} (3.0 in a million)	0.01×10^{-6} (0.01 in a million)	
	Sensitive	0.8×10^{-6} (0.8 in a million)	2.3×10^{-6} (2.3 in a million)	-0.02×10^{-6} (-0.02 in a million)	0.8×10^{-6} (0.8 in a million)	0.005×10^{-6} (0.005 in a million)	
	Student	0.02×10^{-6} (0.02 in a million)	0.1×10^{-6} (0.1 in a million)	-0.001×10^{-6} (-0.001 in a million)	0.02×10^{-6} (0.02 in a million)	0.0001×10^{-6} (0.0001 in a million)	
	Recreational	4.0×10^{-6} (4.0 in a million)	18×10^{-6} (18 in a million)	-0.01×10^{-6} (-0.01 in a million)	4.0×10^{-6} (4.0 in a million)	0.003×10^{-6} (0.003 in a million)	

Notes:

a) The 2009-2078 HRA is for informational purposes only. It shows the risks that would occur over a 70-year exposure period starting in 2009, the first year that the Port is able to implement a wide array of mitigation measures.

b) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

c) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

d) The CEQA increment represents project minus CEQA baseline. The NEPA increment represents project minus NEPA baseline.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

g) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Alt 2 – Impact AQ-8: The No Federal Action Alternative would not conflict with or obstruct implementation of an applicable AQMP.

This alternative would comply with SCAQMD rules and regulations and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

Alternative 2 would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 2.

Residual Impacts

No residual impacts would occur.

NEPA Impact Determination

Under this alternative, no development would occur in the in-water area (i.e., no dredging, dike or fill placement, pile installation, or wharf construction). In addition, backland development under Alternative 2 would be the same as the NEPA baseline. Therefore, potential impacts under NEPA would not occur because there would be no net change in the environmental conditions between Alternative 2 and the NEPA baseline.

Mitigation Measures

No mitigation measures are necessary under NEPA.

Residual Impacts

No residual impacts would occur.

Alt 2 – Impact AQ-9: The No Federal Action Alternative would produce GHG emissions that would exceed the CEQA and NEPA baseline levels.

Table 3.2-61 summarizes the total GHG construction emissions associated with Alternative 2. The annual GHG emissions that would occur within California from the operation of Alternative 2 are shown in Table 3.2-62.

CEQA Impact Determination

Table 3.2-61 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-62 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 2 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

Mitigation measures are not applicable to Alternative 2 during operations because this alternative would not introduce new uses to Berths 97-109.

Residual Impacts

Significant impacts would remain under CEQA.

NEPA Impact Determination

Table 3.2-61 shows that total CO_2e emissions during Alternative 2 construction would exceed NEPA baseline construction emissions. In addition, the data in Table 3.2-62 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 2 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

No mitigation measures are necessary under NEPA.

Residual Impacts

No residual impacts would occur.

Table 3.2-61. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 2 without Mitigation

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.2	0.0	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100 [b]	840	0.1	0.0	846
Crane Delivery and Installation	87	0.0	0.0	87
Berth 100 72-Acre Backlands Development	619	0.1	0.0	623
Construction of Bridge 1	33	0.0	0.0	34
Berth 121 Gate Modifications	29	0.0	0.0	29
Worker Trips	1,025	0.2	0.1	1,073
Phase II				
Construct 18 of 45-acre Backlands	253	0.0	0.0	255
Construct 17 of 45-acre Backland	238	0.0	0.0	239
Construct 10 of 45-acre Backlands	141	0.0	0.0	142
Crane Delivery and Installation	153	0.0	0.0	154
Worker Trips	833	0.2	0.1	880
Total Emissions	**5,546**	**1.0**	**0.3**	**5,662**
CEQA Impact [e]	**5,546**	**0.6**	**0.3**	**5,662**
NEPA Impact [e]	**2,436**	**0.3**	**0.0**	**2,451**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total project construction emissions minus NEPA baseline emissions. The NEPA baseline construction emissions are reported in Table 3.2-12.

Table 3.2-62. Annual Operational GHG Emissions – Alternative 2 (No Federal Action Alternative)

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Terminal Equipment	22,420	21	0	0	0	0	22,959
On-Terminal Electricity Usage	1,706	0	0	0	0	0	1,708
Total For Project Year 2005	**24,126**	**21**	**0**	**0**	**0**	**0**	**24,668**
CEQA Baseline	2,433	1	0	0	0	0	2,457
Project Minus CEQA Baseline	**21,693**	**20**	**0**	**0**	**0**	**0**	**22,210**
NEPA Baseline	24,126	21	0	0	0	0	24,668
Project Minus NEPA Baseline	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Project Year 2015							
Terminal Equipment	25,587	1	0	0	0	0	25,618
On-Terminal Electricity Usage	2,673	0	0	0	0	0	2,677
Total For Project Year 2015	**28,259**	**1**	**0**	**0**	**0**	**0**	**28,295**
CEQA Baseline	2,433	1	0	0	0	0	2,457
Project Minus CEQA Baseline	**25,826**	**0**	**0**	**0**	**0**	**0**	**25,837**
NEPA Baseline	28,259	1	0	0	0	0	28,295
Project Minus NEPA Baseline	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Project Year 2030							
Terminal Equipment	25,615	1	0	0	0	0	25,647
On-Terminal Electricity Usage	2,676	0	0	0	0	0	2,680
Total Project Year 2030	**28,291**	**1**	**0**	**0**	**0**	**0**	**28,327**
CEQA Baseline	2,433	1	0	0	0	0	2,457
Project Minus CEQA Baseline	**25,857**	**0**	**0**	**0**	**0**	**0**	**25,870**
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Project Year 2045							
Terminal Equipment	25,615	1	0	0	0	0	25,647
On-Terminal Electricity Usage	2,676	0	0	0	0	0	2,680
Total Project Year 2045	**28,291**	**1**	**0**	**0**	**0**	**0**	**28,327**
CEQA Baseline	2,433	1	0	0	0	0	2,457
Project Minus CEQA Baseline	**25,857**	**0**	**0**	**0**	**0**	**0**	**25,869**
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:

a) 1 metric ton equals 1000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

3.2.4.4.1.3 Alternative 3 – Reduced Fill: No New Wharf Construction at Berth 102

Alternative 3 would be similar to the proposed Project with the exception that 925 linear feet of wharf proposed at Berth 102 would not be constructed. As a result of no wharf construction at Berth 102, only one additional A-frame crane would be installed for a total of five cranes at the Berth 97-109 Container terminal (four currently exist). The total acreage of backlands under this alternative would be 142 acres, the same as the proposed Project. TEU throughput would be less than the proposed Project, with an expected throughput of 936,000 TEUs by 2030. Section 2.5.1.3 presents a comprehensive description of Alternative 3.

Alt 3 – Impact AQ-1: Alternative 3 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Although this alternative has less wharf construction than the proposed Project, the majority of the construction activities required for the proposed Project would also be required for this alternative. Specifically, emissions for this alternative would be described by all of the activities in Tables 3.2-18 and 3.2-20 except for construction of a 925-foot wharf at Berth 102. Though maximum daily emissions for construction of Alternative 3 would be slightly lower than those from the proposed Project, they would still exceed the SCAQMD daily thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA and exceed the thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under NEPA without mitigation. Detailed emission calculations for construction of Alternative 3 are presented in Appendix E1.

CEQA Impact Determination

Alternative 3 would exceed the daily construction emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phases II and III construction. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation, emissions of VOC would be reduced to a less than significant level. However, despite implementation of mitigation and Project compliance with SCAQMD Rule 403, emissions from the construction of Alternative 3 would exceed the SCAQMD daily thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant.

NEPA Impact Determination

Alternative 3 would exceed the daily construction emission thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during construction. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation, emissions of PM_{10} would be reduced to a less than significant level under NEPA. However, despite implementation of mitigation and Project compliance with SCAQMD Rule 403, emissions from the construction of Alternative 3 would exceed the SCAQMD daily thresholds for NO_X, SO_X, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant.

Alt 3 – Impact AQ-2: Alternative 3 construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Although this alternative has less wharf construction than the proposed Project, the majority of the construction activities required for the proposed Project also would be required for this alternative.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

Because the dispersion modeling analysis for unmitigated Phase II and III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ standards, the Phase II activity for Alternative 3 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum 1-hour offsite ambient pollutant concentrations of NO_2 associated with Alternative 3 Phase II and Phase III activities would exceed the SCAQMD significance thresholds. Therefore, CEQA impacts would be significant for NO_2 during Phases II and III of construction.

NEPA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

Because the dispersion modeling analysis for unmitigated Phase II and III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ for NEPA, the Phase II activity for Alternative 3 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum 1-hour offsite ambient pollutant concentrations of NO_2 associated with Alternative 3 Phase II and Phase III activities would exceed the SCAQMD significance thresholds. Therefore, NEPA impacts would be significant for NO_2 during Phases II and III of construction.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, offsite ambient concentrations from Phase I construction activities remained significant for NO_X and PM_{10}. However, offsite ambient concentrations from Phases II and III construction activities would be below the significance thresholds for all pollutants.

Residual Impacts

The residual air quality impacts would be temporary but significant for NO_X and PM_{10} in Phase I only.

Alt 3 – Impact AQ-3: Alternative 3 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-16.

Table 3.2-63 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for 4 Project study years: 2005, 2015, 2030, and 2045. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with the proposed Project assume the following activity levels:

- Annual container volumes for Berths 97-109 are estimated to be 403,200 TEUs in 2005; 724,200 TEUs in 2015; and 936,000 TEUs in 2030 and 2045.
- Annual ship calls to Berths 97-109 are estimated to be 52 visits in 2005, 104 visits in 2015, and 130 visits in 2030 and 2045.
- Without mitigation, the VSRP compliance rate was assumed to be 68 percent in 2005, 2015, 2030, and 2045. This represents the actual China Shipping compliance rate from 2005 (pers. comm., Maggay, 2005).
- The fraction of all TEUs moving through on-dock rail (Berth 121-131 ICTF) is estimated to be 19.5 percent in 2005, 25.1 percent in 2015, and 21.8 percent in 2030 and 2045. The fraction of all TEUs moving through off-dock rail yards is estimated to be 19.1 percent in 2005, 13.5 percent in 2015, and 14.7 percent in 2030 and 2045. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 61.4 percent in 2005, 61.4 percent in 2015, and 63.5 percent in 2030 and 2045.

Table 3.2-63. Average Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	16	42	548	472	49	39
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	154	553	1,502	13	73	67
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**431**	**1,732**	**5,024**	**946**	**344**	**265**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	371	1,507	4,458	936	313	236
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	248	-969	3,949	942	325	246
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	67	140	1,550	892	137	110
Ships – Hoteling	19	51	667	571	59	47
Tugboats	1	6	32	0	1	1
Trucks	174	744	1,485	3	135	64
Trains	33	116	594	0	18	17
Rail Yard Equipment	2	79	67	0	2	2
Terminal Equipment	39	1,017	884	3	30	28
Worker Trips	4	55	7	0	15	3
Total – Project Year 2015	**339**	**2,207**	**5,286**	**1,469**	**398**	**272**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	279	1,982	4,720	1,458	366	243
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-63. Average Daily Operational Emissions Without Mitigation – Alternative 3

	Average Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	332	1,355	5,215	1,469	395	269
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	89	187	2,062	1,182	182	146
Ships – Hoteling	21	57	745	632	66	53
Tugboats	1	7	30	0	1	1
Trucks	95	403	850	4	120	34
Trains	32	140	590	0	16	15
Rail Yard Equipment	1	87	12	0	0	0
Terminal Equipment	18	1,181	194	3	5	5
Worker Trips	3	32	3	0	17	3
Total – Project Year 2030	**260**	**2,096**	**4,486**	**1,822**	**409**	**257**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	200	1,870	3,920	1,811	377	228
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	252	1,206	4,410	1,821	406	254
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	89	187	2,062	1,182	182	146
Ships – Hoteling	21	57	745	632	66	53
Tugboats	1	7	30	0	1	1
Trucks	88	378	805	4	118	32
Trains	29	140	547	0	13	12
Rail Yard Equipment	1	87	12	0	0	0
Terminal Equipment	18	1,181	194	3	5	5
Worker Trips	2	27	3	0	17	3
Total – Project Year 2045	**251**	**2,065**	**4,398**	**1,822**	**405**	**253**

Table 3.2-63. Average Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	191	1,840	3,832	1,811	373	224
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	243	1,197	4,322	1,821	402	250
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

- This alternative would generate 1,529; 2,522; 2,833; and 2,833 daily truck trips in 2005, 2015, 2030, and 2045 respectively.
- This alternative would generate 448; 806; 986; and 986 annual one-way train trips in 2005, 2015, 2030, and 2045 respectively.

Table 3.2-64 shows the peak daily operational emissions for Alternative 3. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

- Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2005, one 5,000- to 6,000-TEU-capacity vessel arrives and hotels; (b) in 2010 and 2015, one 8,000- to 9,000- TEU-capacity vessel arrives and hotels; (c) and in 2030 and 2045, one 9,000- to 11,000-TEU-capacity vessel arrives and hotels. The time each vessel is assumed to hotel equals 24 hours minus the ship transit time between the South Coast Air Basin overwater boundary and the berth. Without mitigation, the emissions also assume that each ship uses residual fuel with a worst case sulfur content of 4.5 percent.
- Trains and rail yard equipment: (a) In all analysis years, the peak day scenario for the Berth 121-131 (on-dock) rail yard assumes that the equivalent of one four-locomotive train carrying only Project-generated cargo arrives and is completely disassembled, and a second four-locomotive train carrying only Project-generated

cargo is fully assembled and departs. The same assumption is also made for the off-dock rail yards in total. (b) In 2030 and 2045, the peak day scenario for the Berth 121-131 (on-dock) rail yard assumes that the equivalent of two four-locomotive trains carrying only project-generated cargo arrive and are completely disassembled, and two additional four-locomotive trains carrying only project-generated cargo are fully assembled and depart. The same assumption is also made for the off-dock rail yards in total.

- Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 33 percent more truck trips on the peak day compared to an average day for 2005, 2010, and 2015, and about 22 percent more truck trips than an average day for 2030 and 2045. The peaking factor is lower in 2030 and 2045 because port activities are assumed to be more evenly spread out during the year because of the higher throughput (that is, all months are assumed to be equally busy).
- Terminal equipment: A peak day factor for cargo-handling equipment was developed by determining the maximum number of TEUs that could be moved in a day relative to the annual TEU throughput. The maximum daily TEU throughput is a composite of the peak day activity at the wharf (ship loading and unloading), gate (truck trips), and Berth 121-131 (on-dock) rail yard (train loading and unloading). Peak daily container throughput at the wharf was calculated assuming all available cranes at the wharf would be simultaneously loading and unloading containers from ships. The number of available cranes would be four in 2005 and 2010, and five in 2015 and beyond. Peak daily container throughputs at the gate and on-dock rail yard were determined based on the peak daily truck and train trips, described in the preceding paragraphs. The resulting peak day factors for terminal equipment, relative to an average day of activity, were estimated to be 2.5 for 2005, 2.3 for 2010, 2.2 for 2015, and 2.0 for 2030 and 2045.

Both tables show that emissions would decrease for VOC, NO_X, and $PM_{2.5}$ between 2005 and 2015; increase slightly for CO, SO_X, and PM_{10}. From 2015 to 2030 all emissions, with the exception of SO_X, would decrease. From 2030 to 2045 all emissions would decrease.

Table 3.2-64. Peak Daily Operational Emissions Without Mitigation – Alternative 3

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	379	1,359	3,693	31	179	165
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**945**	**3,428**	**12,785**	**5,651**	**1,027**	**824**

Table 3.2-64. Peak Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	784	2,822	11,262	5,622	942	747
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	453	-3,840	9,894	5,640	974	774
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	181	377	4,428	4,268	521	416
Ships – Hoteling	39	105	1,386	2,484	214	171
Tugboats	1	10	56	0	2	2
Trucks	232	994	1,984	4	181	86
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	4	143	121	0	4	3
Terminal Equipment	86	2,244	1,951	6	66	61
Worker Trips	5	67	9	0	18	4
Total – Project Year 2015	**626**	**4,209**	**11,318**	**6,764**	**1,047**	**782**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	465	3,602	9,795	6,735	962	704
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	606	1,917	11,125	6,763	1,040	775
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	193	402	4,717	4,532	554	443
Ships – Hoteling	39	105	1,386	2,484	214	171
Tugboats	1	10	42	0	2	2
Trucks	116	493	1,040	4	147	42
Trains	61	269	1,133	1	30	28
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	36	2,335	384	7	10	9
Worker Trips	4	39	4	0	21	4

Table 3.2-64. Peak Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Total – Project Year 2030	**452**	**3,784**	**8,724**	**7,029**	**979**	**699**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	291	3,177	7,201	7,000	894	621
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	430	1,391	8,519	7,028	971	691
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	193	402	4,717	4,532	554	443
Ships – Hoteling	39	105	1,386	2,484	214	171
Tugboats	1	10	42	0	2	2
Trucks	108	463	985	4	145	40
Trains	55	269	1,050	1	26	24
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	36	2,335	384	7	10	9
Worker Trips	3	33	3	0	21	4
Total – Project Year 2045	**438**	**3,747**	**8,586**	**7,029**	**972**	**693**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	276	3,140	7,063	7,000	887	615
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	416	1,411	8,383	7,028	965	686
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Due to the lengthy construction period, operational activities would overlap with construction. Table 3.2-65 shows the combined total of construction and operational emissions for year 2010 during which construction and operation activities would occur simultaneously.

Table 3.2-65. Peak Daily 2010 Construction and Operational Emissions – Alternative 3 Without Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
South Extension of Berth 100	21	63	442	0	19	18
Construct 25-acre Backlands (Behind Berth 100)	16	55	127	0	73	19
Crane Delivery and Installation	46	116	1,300	1,452	154	123
Worker Trips	2	25	3	0.02	5	1
Maximum Daily Construction Emissions	**85**	**259**	**1,872**	**1,453**	**250**	**161**
Operation						
Ships – Transit and Anchoring	181	377	4,428	4,268	521	416
Ships – Hoteling	39	105	1,386	2,484	214	171
Tugboats	1	10	63	0	2	2
Trucks	293	1,321	2,554	3	193	116
Trains	84	269	1,481	31	48	45
Rail Yard Equipment	4	134	115	0	3	3
Terminal Equipment	79	1,620	1,484	4	50	46
Worker Trips	7	79	10	0	14	3
Maximum Daily Emissions – Operation	**688**	**3,915**	**11,521**	**6,792**	**1,046**	**802**
Total – Construction & Operation – Project Year 2010	**773**	**4,174**	**13,393**	**8,245**	**1,296**	**963**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**612**	**3,567**	**11,870**	**8,217**	**1,211**	**885**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**-121**	**-12,013**	**9,861**	**8,244**	**1,201**	**897**
Thresholds [d]	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

[a] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[b] The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

[c] NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

[d] The SCAQMD operational thresholds are used in the significance determinations.

CEQA Impact Determination

From a CEQA perspective, Alternative 3 unmitigated peak daily emissions are expected to exceed CEQA baseline emissions for all criteria pollutants in all study years. The unmitigated air quality impacts associated with Alternative 3 are expected to be significant for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2005, 2015, 2030, and 2045. Unmitigated peak daily VOC emissions are expected to exceed the 10 ton/year threshold. In addition, for 2010 the combined totals of construction and operational impacts are expected to be significant for all characterized pollutants.

NEPA Impact Determination

From a NEPA perspective, Alternative 3 unmitigated peak daily emissions are expected to exceed NEPA baseline emissions for all criteria pollutants in all study years except CO in 2005. The unmitigated air quality impacts associated with Alternative 3 are expected to be significant for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ in 2005; and all characterized pollutants in 2015, 2030, and 2045. Unmitigated peak daily VOC emissions are expected to exceed 10 ton/year threshold. In addition, for 2010 the combined totals of construction and operational impacts are expected to be significant for NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

Mitigation Measures

MM AQ-9 through **MM AQ-24** would apply to Alternative 3. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Tables 3.2-66 and 3.2-67 present average daily and peak daily mitigated emissions associated with Alternative 3. Table 3.2-68 shows the combined total of construction and operational emissions for year 2010, with mitigation.

From a CEQA perspective, Alternative 3 peak daily emissions after mitigation are expected to exceed baseline emissions for all criteria pollutants in all study years. The air quality impacts associated with Alternative 3 after mitigation are expected to remain significant for all criteria pollutants in 2005; and for all criteria pollutants except SO_X in 2015, 2030, and 2045. Emissions of SO_X would be reduced to a less than significant level in 2015, 2030, and 2045. In addition, in 2010 the combined total of construction and operational impacts is expected to be significant for all characterized pollutants.

From a NEPA perspective, Alternative 3 peak daily emissions after mitigation are expected to be greater than NEPA baseline emissions for all criteria pollutants for all study years. Air quality impacts are expected to remain significant for all criteria pollutants in 2005 (CO emissions would increase and also become significant); and remain significant for all pollutants except SO_X in years 2015, 2030, and 2045. In addition, in 2010 the combined total of construction and operational impacts is expected to be significant for all characterized pollutants except CO.

Table 3.2-66. Average Daily Operational Emissions With Mitigation – Alternative 3

	Average Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	7	20	243	270	24	19
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	183	2,701	1,074	4	20	19
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**451**	**3,859**	**4,292**	**735**	**266**	**197**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	391	3,633	3,726	724	235	168
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	268	1,158	3,218	731	247	178
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	52	103	670	40	23	18
Ships – Hoteling	1	7	47	18	4	4
Tugboats	1	6	32	0	1	1
Trucks	60	207	521	1	92	25
Trains	33	116	594	0	18	16
Rail Yard Equipment	1	73	30	0	1	1
Terminal Equipment	7	947	67	1	3	3
Worker Trips	4	55	7	0	15	3
Total – Project Year 2015	**160**	**1,513**	**1,967**	**60**	**157**	**71**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	100	1,287	1,401	50	126	43
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	153	661	1,895	60	155	69

Table 3.2-66. Average Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	69	137	886	52	31	24
Ships – Hoteling	2	7	51	19	5	4
Tugboats	1	7	30	0	1	1
Trucks	109	324	954	0	127	42
Trains	32	140	590	0	16	14
Rail Yard Equipment	1	87	12	0	0	0
Terminal Equipment	9	1,274	90	2	4	4
Worker Trips	3	32	3	0	17	3
Total – Project Year 2030	**226**	**2,009**	**2,617**	**74**	**201**	**94**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	166	1,784	2,051	63	169	65
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	218	1,120	2,540	73	198	91
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	69	137	886	52	31	24
Ships – Hoteling	2	7	51	19	5	4
Tugboats	1	7	30	0	1	1
Trucks	109	324	954	0	127	42
Trains	29	140	547	0	13	12
Rail Yard Equipment	1	87	12	0	0	0
Terminal Equipment	9	1,242	89	2	4	4
Worker Trips	2	27	3	0	17	3
Total – Project Year 2045	**222**	**1,973**	**2,572**	**74**	**198**	**91**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	162	1,747	2,006	63	167	62
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Table 3.2-66. Average Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	214	1,104	2,496	73	196	89
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available

Table 3.2-67. Peak Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	450	6,644	2,642	10	48	46
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**1,016**	**8,714**	**11,734**	**5,629**	**896**	**706**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	855	8,107	10,211	5,601	812	628
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	524	1,445	8,843	5,619	844	656
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-67. Peak Daily Operational Emissions With Mitigation – Alternative 3

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2015						
Ships – Transit and Anchoring	125	237	1,433	78	51	41
Ships – Hoteling	2	12	83	30	8	6
Tugboats	1	10	56	0	2	2
Trucks	81	277	696	1	123	34
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	3	135	69	0	2	2
Terminal Equipment	14	2,089	148	3	7	7
Worker Trips	5	67	9	0	18	4
Total – Project Year 2015	**310**	**3,096**	**3,877**	**114**	**252**	**133**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	149	2,489	2,354	86	168	56
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	290	804	3,684	113	246	127
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	133	251	1,504	82	54	44
Ships – Hoteling	2	12	83	30	8	6
Tugboats	1	10	42	0	2	2
Trucks	133	396	1,167	0	155	51
Trains	61	269	1,133	1	30	28
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	18	2,518	179	4	8	8
Worker Trips	4	39	4	0	21	4
Total – Project Year 2030	**355**	**3,625**	**4,130**	**117**	**279**	**143**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	194	3,019	2,607	89	194	65
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Table 3.2-67. Peak Daily Operational Emissions With Mitigation – Alternative 3

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	333	1,232	3,925	116	271	136
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	133	251	1,504	82	54	44
Ships – Hoteling	2	12	83	30	8	6
Tugboats	1	10	42	0	2	2
Trucks	133	396	1,167	0	155	51
Trains	55	269	1,050	1	25	23
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	17	2,456	176	4	8	8
Worker Trips	3	33	3	0	21	4
Total – Project Year 2045	**348**	**3,557**	**4,044**	**117**	**274**	**139**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	186	2,950	2,521	89	189	61
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	326	1,221	3,841	116	267	131
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-68. Peak Daily 2010 Construction and Operational Emissions – Alternative 3 With Mitigation

	Peak Daily Emissions (lb/day)					
Project Year 2010	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
South Extension of Berth 100	17	63	303	0	16	15
Construct 25-acre Backlands (Behind Berth 100)	11	48	109	0	29	8
Crane Delivery and Installation	36	96	1,039	1,208	125	101
Worker Trips	2	25	3	0	5	1
Maximum Daily Construction Emissions	**67**	**232**	**1,454**	**1,209**	**175**	**124**
Operation						
Ships – Transit and Anchoring	125	237	2,044	1,843	274	219
Ships – Hoteling	36	96	1,276	2,288	197	158
Tugboats	1	10	63	0	2	2
Trucks	166	743	1,687	3	136	63
Trains	84	269	1,481	31	48	45
Rail Yard Equipment	4	134	115	0	3	3
Terminal Equipment	773	14,584	2,751	2	41	41
Worker Trips	7	79	10	0	14	3
Maximum Daily Emissions – Operation	**1,197**	**16,152**	**9,429**	**4,168**	**716**	**533**
Total – Construction & Operation – Project Year 2010	**1,264**	**16,384**	**10,883**	**5,377**	**891**	**657**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**1,103**	**15,777**	**9,360**	**5,349**	**806**	**579**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**370**	**197**	**7,351**	**5,376**	**796**	**591**
Thresholds	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

[a] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[b] The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

[c] NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

[d] The SCAQMD operational thresholds are used in the significance determinations.

Alt 3 – Impact AQ-4: Alternative 3 operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17

Dispersion modeling of onsite and offsite Project operational emissions was performed to assess the impact of Alternative 3 on local ambient air concentrations. Construction emissions were added to the operational emissions in the model during the periods where construction emissions overlap with operations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-69 presents the maximum offsite ground-level concentrations of NO_2 and CO for the Alternative 3 without mitigation. Table 3.2-70 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

Table 3.2-69. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 3 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 3 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	1,740	263	**2,003**	338
	Annual	51.1	52.7	**103.8**	56.4
CO	1-hour	966	4,809	5,775	23,000
	8-hour	240	4,008	4,248	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**. The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

b) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

c) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

CEQA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2 (1-hour and annual), PM_{10} (24-hour) and $PM_{2.5}$ (24-hour). Therefore, significant impacts under CEQA would occur.

NEPA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for $NO_{2,}$ (1-hour and annual) and PM_{10} (24-hour), and $PM_{2.5}$ (24-hour). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Alternative 3 operations would be the same as measures **MM AQ-9** through **MM AQ-24** described for the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Table 3.2-70. Maximum Offsite PM Concentrations Associated with Operation of Alternative 3 without Mitigation

	Maximum Modeled Concentration of Alt. 3 ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment [c] ($\mu g/m^3$)	Ground-Level Concentration NEPA Increment [c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10} 24-hour	13.5	10.2	5.7	**8.4**	**7.1**	2.5
$PM_{2.5}$ 24-hour	12.2	9.4	3.8	**7.6**	**8.5**	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 3 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents Project minus CEQA baseline. The NEPA Increment represents Project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-71 presents the maximum offsite ground-level concentrations of NO_2 and CO for Alternative 3 after mitigation. Table 3.2-72 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments after mitigation.

Table 3.2-71. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 3 with Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 3 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	1,669	263	**1,932**	338
	Annual	42.0	52.7	**94.7**	56.4
CO	1-hour	5,691	4,809	10,500	23,000
	8-hour	1,406	4,008	5,414	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**. The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

b) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

c) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Residual Impacts

From a CEQA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

From a NEPA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

Table 3.2-72. Maximum Offsite PM Concentrations Associated with Operation of Alternative 3 with Mitigation

	Maximum Modeled Concentration of Alt. 3 ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment [c] ($\mu g/m^3$)	Ground-Level Concentration NEPA Incr ment [c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10} 24-hour	7.6	10.2	5.7	**4.3**	**4.1**	2.5
$PM_{2.5}$ 24-hour	5.38	9.4	3.8	**3.4**	**3.5**	2.5

Notes:

a) Exceedances of the threshold are indicated in bold. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Alternative 3 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents Project minus CEQA baseline. The NEPA Increment represents Project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Alt 3 – Impact AQ-5: Alternative 3 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate traffic levels comparable to or less than traffic generated by the proposed Project. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any Project study year.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

NEPA Impact Determination

Significant impacts under NEPA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 3 – Impact AQ-6: Alternative 3 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources, and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; significant odor impacts under CEQA, therefore, are not anticipated.

NEPA Impact Determination

As a result of the above, the potential is low for the Project to produce objectionable odors that would affect a sensitive receptor; and, therefore, significant odor impacts under NEPA are not anticipated.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 3 – Impact AQ-7: Alternative 3 would expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 3 operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2004 through 2073. An HRA was performed over this 70-year exposure period.

Table 3.2-73 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for this alternative, CEQA baseline, NEPA baseline, CEQA increment (alternative minus CEQA baseline), and NEPA increment (alternative minus NEPA baseline).

CEQA Impact Determination

Alternative 3 would move fewer TEUs than the proposed Project and, therefore, would have lower DPM emissions and lower health risk impacts. However, Table 3.2-73 shows that the maximum CEQA cancer risk increment associated with the unmitigated Alternative 3 is predicted to be 59 in a million (59×10^{-6}), at a recreational receptor. This risk value would exceed the significance criterion of 10 in a million. The CEQA cancer risk increment would also exceed the threshold at residential, occupational, and sensitive receptors. These exceedances are considered significant impacts under CEQA.

Table 3.2-73. Maximum Health Impacts Associated With The Alternative 3 Without Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 3	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	72 × 10^{-6} (72 in a million)	14 × 10^{-6} (14 in a million)	**57 × 10^{-6} (57 in a million)**	9.1 × 10^{-6} (9.1 in a million)	**63 × 10^{-6} (63 in a million)**	10 × 10^{-6} 10 in a million
	Occupational	52 × 10^{-6} (52 in a million)	11 × 10^{-6} (11 in a million)	**43 × 10^{-6} (43 in a million)**	7.5 × 10^{-6} (7.5 in a million)	**45 × 10^{-6} (45 in a million)**	
	Sensitive	37 × 10^{-6} (37 in a million)	2.3 × 10^{-6} (2.3 in a million)	**35 × 10^{-6} (35 in a million)**	2.1 × 10^{-6} (2.1 in a million)	**35 × 10^{-6} (35 in a million)**	
	Student	1.0 × 10^{-6} (1.0 in a million)	0.1 × 10^{-6} (0.1 in a million)	1.0 × 10^{-6} (1.0 in a million)	0.1 × 10^{-6} (0.1 in a million)	1.0 × 10^{-6} (1.0 in a million)	
	Recreational	68 × 10^{-6} (68 in a million)	18 × 10^{-6} (18 in a million)	**59 × 10^{-6} (59 in a million)**	9.9 × 10^{-6} (9.9 in a million)	**59 × 10^{-6} (59 in a million)**	
Chronic Hazard Index	Residential	0.21	0.14	0.08	0.12	0.09	1.0
	Occupational	0.68	0.43	0.39	0.39	0.34	
	Sensitive	0.06	0.02	0.04	0.03	0.04	
	Student	0.06	0.02	0.04	0.03	0.04	
	Recreational	0.57	0.43	0.35	0.33	0.29	
Acute Hazard Index	Residential	1.14	0.13	**1.12**	0.24	**1.07**	1.0
	Occupational	1.99	0.22	**1.97**	0.38	**1.91**	
	Sensitive	0.93	0.04	0.90	0.14	0.87	
	Student	0.93	0.04	0.90	0.14	0.87	
	Recreational	1.31	0.22	**1.27**	0.34	**1.19**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and (2) one ship harbor transiting, turning, and docking. The scenario that yielded the highest result is reported for each impact type. Ships were conservatively assumed to use fuel with a 4.5 percent sulfur content for the 1-hour acute hazard index calculation.

g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

The maximum chronic hazard index CEQA increment is predicted to be below significance for all receptor types. However, the acute hazard index CEQA increment is predicted to exceed the significance threshold of 1.0 for several receptors, including the residential receptor.

NEPA Impact Determination

Table 3.2-73 shows that the maximum NEPA cancer risk increment associated with the unmitigated Alternative 3 is predicted to be 63 in a million (63×10^{-6}), at a residential receptor. This risk value exceeds the significance criterion of 10 in a million and would be considered a significant impact. The NEPA cancer risk increment would also exceed the threshold at occupational, sensitive, and recreational receptors. These exceedances are considered significant impacts under NEPA.

The maximum chronic hazard index NEPA increment is predicted to be below significance for all receptor types. However, the acute hazard index NEPA increment is predicted to exceed the significance threshold of 1.0 for several receptors, including the residential receptor.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9** through **MM AQ-24** described above for the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-74 presents a summary of the maximum health impacts that would occur with operation of this alternative with mitigation. The data show that the maximum CEQA cancer risk increment after mitigation is predicted to be 16 in a million (16×10^{-6}), at a recreational receptor. This risk value would exceed the significance threshold of 10 in a million. The CEQA cancer risk increment would also equal or exceed the threshold at an occupational receptor. These exceedances are considered significant impacts under CEQA.

The maximum chronic hazard index CEQA increment is predicted to be below the significance threshold of 1.0. The acute hazard index CEQA increment is predicted to be above the significance threshold of 1.0 and is therefore considered significant for several receptors, including the residential receptor.

The maximum NEPA cancer risk increment after mitigation is predicted to be 15 in a million (15×10^{-6}), at a recreational receptor. This risk value is above the significance threshold of 10 in a million. The NEPA cancer risk increment also would equal or exceed the threshold at an occupational receptor. These exceedances are considered significant impacts under NEPA.

The maximum chronic hazard index NEPA increment is predicted to be below the significance threshold of 1.0. The acute hazard index NEPA increment is predicted to be above the significance threshold of 1.0 and, therefore, is considered significant for several receptors, including the residential receptor.

Table 3.2-74. Maximum Health Impacts Associated With The Alternative 3 With Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 3	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	15×10^{-6} (15 in a million)	14×10^{-6} (14 in a million)	8.4×10^{-6} (8.4 in a million)	9.1×10^{-6} (9.1 in a million)	8.2×10^{-6} (8.2 in a million)	
	Occupational	11×10^{-6} (11 in a million)	11×10^{-6} (11 in a million)	**10×10^{-6}** **(10 in a million)**	7.5×10^{-6} (7.5 in a million)	**10×10^{-6}** **(10 in a million)**	
	Sensitive	6.9×10^{-6} (6.9 in a million)	2.3×10^{-6} (2.3 in a million)	4.6×10^{-6} (4.6 in a million)	2.1×10^{-6} (2.1 in a million)	4.8×10^{-6} (4.8 in a million)	10×10^{-6} 10 in a million
	Student	0.2×10^{-6} (0.2 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	
	Recreational	16×10^{-6} (16 in a million)	18×10^{-6} (18 in a million)	**16×10^{-6}** **(16 in a million)**	9.9×10^{-6} (9.9 in a million)	**15×10^{-6}** **(15 in a million)**	
Chronic Hazard Index	Residential	0.16	0.14	0.05	0.12	0.04	
	Occupational	0.53	0.43	0.28	0.39	0.21	
	Sensitive	0.05	0.02	0.02	0.03	0.02	1.0
	Student	0.05	0.02	0.02	0.03	0.02	
	Recreational	0.45	0.43	0.23	0.33	0.17	
Acute Hazard Index	Residential	1.13	0.13	**1.11**	0.24	**1.07**	
	Occupational	1.99	0.22	**1.97**	0.38	**1.90**	
	Sensitive	0.93	0.04	0.90	0.14	0.87	1.0
	Student	0.93	0.04	0.90	0.14	0.87	
	Recreational	1.31	0.22	**1.28**	0.34	**1.20**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and (2) one ship harbor transiting, turning, and docking. The scenario that yielded the highest result is reported for each impact type.

g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-75 presents results of the 2009-2078 HRA. The results are provided for information purposes only and were not used to determine significance. However, the 2009-2078 HRA results indicate that the mitigation measures imposed by the Port starting in 2009 would further reduce the maximum cancer risk impacts relative to the 2004-2073 mitigated HRA levels.

Table 3.2-75. Maximum Health Impacts Associated With The Alternative 3 With Mitigation, 2009-2078

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 3	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	6.2×10^{-6} (6.2 in a million)	14×10^{-6} (14 in a million)	4.8×10^{-6} (4.8 in a million)	3.6×10^{-6} (3.6 in a million)	5.1×10^{-6} (5.1 in a million)	10×10^{-6} 10 in a million
	Occupational	7.9×10^{-6} (7.9 in a million)	11×10^{-6} (11 in a million)	7.6×10^{-6} (7.6 in a million)	3.0×10^{-6} (3.0 in a million)	7.7×10^{-6} (7.7 in a million)	
	Sensitive	3.8×10^{-6} (3.8 in a million)	2.3×10^{-6} (2.3 in a million)	2.8×10^{-6} (2.8 in a million)	0.8×10^{-6} (0.8 in a million)	3.0×10^{-6} (3.0 in a million)	
	Student	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.02×10^{-6} (0.02 in a million)	0.1×10^{-6} (0.1 in a million)	
	Recreational	11×10^{-6} (11 in a million)	18×10^{-6} (18 in a million)	**11×10^{-6} (11 in a million)**	4.0×10^{-6} (4.0 in a million)	**11×10^{-6} (11 in a million)**	

Notes:

a) The 2009-2078 HRA is for informational purposes only. It shows the risks that would occur over a 70-year exposure period starting in 2009, the first year that the Port is able to implement a wide array of mitigation measures.

b) Exceedances of the significance criteria are in bold. The significance thresholds apply to the CEQA and NEPA increments only.

c) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

d) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

g) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and (2) one ship harbor transiting, turning, and docking. The scenario that yielded the highest result is reported for each impact type.

h) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

i) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Alt 3 – Impact AQ-8: Alternative 3 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 3.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 3 – Impact AQ-9: Alternative 3 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-76 summarizes the total GHG construction emissions associated with Alternative 3. Table 3.2-77 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 3.

Table 3.2-76. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 3 without Mitigation

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.2	0.0	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100 [b]	840	0.1	0.0	846
Crane Delivery and Installation	87	0.0	0.0	87
Berth 100 72-Acre Backlands Development	619	0.1	0.0	623
Construction of Bridge 1	33	0.0	0.0	34
Berth 121 Gate Modifications	29	0.0	0.0	29
Worker Trips	1,025	0.2	0.1	1,073
Phase II	90	0.0	0.0	90
Construct Berth 100-109 Building	253	0.0	0.0	255
Construct 18 of 45-acre Backlands	34	0.0	0.0	34
Construct Bridge 2	238	0.0	0.0	239
Construct 17 of 45-acre Backland	141	0.0	0.0	142
Construct 10 of 45-acre Backlands	90	0.0	0.0	90
Worker Trips	833	0.2	0.1	880
Phase III				
South Extension of Berth 100	1,246	0.1	0.0	1,253
Construct 25-acre Backlands (Behind Berth 100)	375	0.0	0.0	377
Crane Delivery and Installation	56	0.0	0.0	56

Table 3.2-76. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 3 without Mitigation

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Worker Trips	833	0.2	0.1	880
Total Emissions	**8,115**	**1**	**0**	**8,288**
CEQA Impact [f]	**8,115**	**1**	**0**	**8,288**
NEPA Impact [f]	**5,005**	**1**	**0**	**5,077**

Notes:

a) Prior to commencing the Phases II and III construction activities, the Catalina Express terminal would be temporarily relocated to Berth 95. Emissions associated with installing floating docks and temporary trailers would be minimal, and would not affect the calculation of maximum daily construction emissions presented in this table.

b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

d) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

e) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

f) The CEQA Impact equals total project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total project construction emissions minus NEPA baseline emissions. The NEPA baseline construction emissions are reported in Table 3.2-12.

CEQA Impact Determination

Table 3.2-76 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-77 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 3 would produce significant levels of GHG emissions under CEQA.

NEPA Impact Determination

Table 3.2-76 shows that total CO_2e emissions during project construction would exceed NEPA baseline construction emissions. In addition, the data in Table 3.2-77 show that in each future Project year, annual operational CO_2e emissions would increase from NEPA baseline levels.

Table 3.2-77. Annual Operational GHG Emissions – Alternative 3 without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	6,015	0.8	0.1	0	0	0	6,049
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	19,857	1.9	0.2	0	0	0	19,970
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	0	0.0	0.0	0	0	0	0
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**175,884**	**12.8**	**3.8**	**0.07**	**0.17**	**0.09**	**178,080**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**173,451**	**12.0**	**3.8**	**0.07**	**0.17**	**0.09**	**175,622**
NEPA Baseline	24,126	21	0	0	0	0	24,668
Project Minus NEPA Baseline	**151,758**	**-8**	**3**	**0.1**	**0.2**	**0.1**	**153,412**
Project Year 2015							
Ships – Transit	38,848	5.1	0.3	0	0	0	39,062
Ships – Hoteling	7,268	1.0	0.1	0	0	0	7,308
Tugboats	344	0.0	0.0	0	0	0	346
Trucks	235,073	11.7	5.9	0	0	0	237,136
Trains	14,355	2.0	0.1	0	0	0	14,441
Rail Yard Equipment	2,750	0.0	0.0	0	0	0	2,760
Terminal Equipment	0	0.0	0.0	0	0	0	0
Reefer Refrigerant Losses	0	0.0	0.0	0.13	0.31	0.15	1,339
AMP Usage	0	0.0	0.0	0	0	0	0
On-Terminal Electricity Usage	3,064	0.0	0.0	0	0	0	3,068
Worker Trips	1,348	0.4	0.2	0	0	0	1,423
Total For Project Year 2015	**303,049**	**20.3**	**6.7**	**0.13**	**0.31**	**0.15**	**306,885**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**300,616**	**19.5**	**6.7**	**0.13**	**0.31**	**0.15**	**304,427**
NEPA Baseline	28,259	1	0	0	0	0	28,295
Project Minus NEPA Baseline	**274,790**	**19.4**	**6.6**	**0.13**	**0.31**	**0.15**	**278,590**
Project Year 2030							
Ships – Transit	51,708	6.8	0.5	0	0	0	51,992
Ships – Hoteling	8,046	1.1	0.1	0	0	0	8,091
Tugboats	430	0.1	0.0	0	0	0	433

Table 3.2-77. Annual Operational GHG Emissions – Alternative 3 without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Trucks	278,969	13.5	6.8	0	0	0	281,353
Trains	16,778	2.3	0.2	0	0	0	16,878
Rail Yard Equipment	3,362	0.0	0.0	0	0	0	3,375
Terminal Equipment	46,097	0.2	0.5	0	0	0	46,270
Reefer Refrigerant Losses	0	0.0	0.0	0.17	0.39	0.20	1,731
AMP Usage	0	0.0	0.0	0	0	0	0
On-Terminal Electricity Usage	3,960	0.0	0.0	0	0	0	3,966
Worker Trips	1,600	0.5	0.3				1,690
Total Project Year 2030	**410,950**	**24.6**	**8.3**	**0.17**	**0.39**	**0.20**	**415,779**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**408,517**	**23.8**	**8.3**	**0.17**	**0.39**	**0.20**	**413,321**
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**382,659**	**23.7**	**8.3**	**0.17**	**0.39**	**0.20**	**387,452**
Project Year 2045							
Ships – Transit	51,708	6.8	0.5	0	0	0	51,992
Ships – Hoteling	8,046	1.1	0.1	0	0	0	8,091
Tugboats	430	0.1	0.0	0	0	0	433
Trucks	279,082	13.5	6.8	0	0	0	281,465
Trains	16,778	2.3	0.2	0	0	0	16,878
Rail Yard Equipment	3,362	0.0	0.0	0	0	0	3,375
Terminal Equipment	46,097	0.2	0.5	0	0	0	46,270
Reefer Refrigerant Losses	0	0.0	0.0	0.17	0.39	0.20	1,731
AMP Usage	0	0.0	0.0	0	0	0	0
On-Terminal Electricity Usage	3,960	0.0	0.0	0	0	0	3,966
Worker Trips	1,635	0.5	0.3				1,727
Total Project Year 2045	**411,097**	**24.6**	**8.3**	**0.17**	**0.39**	**0.20**	**415,928**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**408,663**	**23.8**	**8.3**	**0.17**	**0.39**	**0.20**	**413,470**
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**382,806**	**23.7**	**8.3**	**0.17**	**0.39**	**0.20**	**387,601**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 3 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2** through **MM AQ-4** for construction; and **MM AQ-9, MMAQ-10, MM AQ-17, MM AQ-20, MM AQ-21**, and **MM AQ-25** through **MM AQ-30** for operations.

Table 3.2-78 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP), **MM AQ-10** (VSRP), **MM AQ-17** (yard equipment), and **MM AQ-20** (LNG trucks) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for **Impact AQ-9**.

Table 3.2-78. Annual Operational GHG Emissions – Alternative 3 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	3,441	0.5	0.0	0	0	0	3,460
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	22,420	20.9	0.3	0	0	0	22,959
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	1,318	0.0	0.0	0	0	0	1,320
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**177,191**	**31.5**	**3.9**	**0.07**	**0.17**	**0.09**	**179,800**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**174,757**	**30.7**	**3.9**	**0.07**	**0.17**	**0.09**	**177,343**
NEPA Baseline	24,126	20.9	0.3	0	0	0	24,668
Project Minus NEPA Baseline	**153,065**	**10.5**	**3.6**	**0.07**	**0.17**	**0.09**	**155,133**
Project Year 2015							
Ships – Transit	14,642	2.0	0.1	0	0	0	14,729
Ships – Hoteling	1,979	0.3	0.0	0	0	0	1,991
Tugboats	344	0.0	0.0	0	0	0	346
Trucks	122,350	289.0	5.9	0	0	0	130,235
Trains	14,355	2.0	0.1	0	0	0	14,441
Rail Yard Equipment	2,750	0.0	0.0	0	0	0	2,760
Terminal Equipment	27,678	1.0	0.0	0	0	0	27,703
Reefer Refrigerant Losses	0	0.0	0.0	0.13	0.31	0.15	1,339

Table 3.2-78. Annual Operational GHG Emissions – Alternative 3 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
AMP Usage	2,681	0.0	0.0	0	0	0	2,686
On-Terminal Electricity Usage	3,064	0.0	0.0	0	0	0	3,068
Worker Trips	1,348	0.4	0.2	0	0	0	1,423
Total For Project Year 2015	**191,190**	**294.8**	**6.5**	**0.13**	**0.31**	**0.15**	**200,723**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**188,756**	**294.0**	**6.4**	**0.13**	**0.31**	**0.15**	**198,266**
NEPA Baseline	28,259	0.9	0.1	0	0	0	28,295
Project Minus NEPA Baseline	**162,930**	**293.9**	**6.4**	**0.13**	**0.31**	**0.15**	**172,428**
Project Year 2030							
Ships – Transit	19,293	2.7	0.2	0	0	0	19,408
Ships – Hoteling	2,141	0.3	0.0	0	0	0	2,154
Tugboats	430	0.1	0.0	0	0	0	433
Trucks	84,535	471.2	6.8	0	0	0	96,529
Trains	16,778	2.3	0.2	0	0	0	16,878
Rail Yard Equipment	3,362	0.0	0.0	0	0	0	3,375
Terminal Equipment	35,772	1.3	0.0	0	0	0	35,807
Reefer Refrigerant Losses	0	0.0	0.0	0.17	0.39	0.20	1,731
AMP Usage	2,995	0.0	0.0	0	0	0	3,000
On-Terminal Electricity Usage	3,960	0.0	0.0	0	0	0	3,966
Worker Trips	1,600	0.5	0.3				1,690
Total Project Year 2030	**170,866**	**478.5**	**7.5**	**0.17**	**0.39**	**0.20**	**184,971**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**168,432**	**477.7**	**7.5**	**0.17**	**0.39**	**0.20**	**182,514**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**142,575**	**477.5**	**7.5**	**0.17**	**0.39**	**0.20**	**156,644**
Project Year 2045							
Ships – Transit	19,293	2.7	0.2	0	0	0	19,408
Ships – Hoteling	2,141	0.3	0.0	0	0	0	2,154
Tugboats	430	0.1	0.0	0	0	0	433
Trucks	84,535	471.2	6.8	0	0	0	96,529
Trains	16,778	2.3	0.2	0	0	0	16,878
Rail Yard Equipment	3,362	0.0	0.0	0	0	0	3,375
Terminal Equipment	35,772	1.3	0.0	0	0	0	35,806
Reefer Refrigerant Losses	0	0.0	0.0	0.17	0.39	0.20	1,731
AMP Usage	2,995	0.0	0.0	0	0	0	3,000
On-Terminal Electricity Usage	3,960	0.0	0.0	0	0	0	3,966

Table 3.2-78. Annual Operational GHG Emissions – Alternative 3 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Worker Trips	1,635	0.5	0.3				1,727
Total Project Year 2045	**170,900**	**478.4**	**7.5**	**0.17**	**0.39**	**0.20**	**185,007**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**168,467**	**477.7**	**7.5**	**0.17**	**0.39**	**0.20**	**182,549**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**142,610**	**477.5**	**7.5**	**0.17**	**0.39**	**0.20**	**156,680**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

Residual Impacts

Significant impacts would remain under CEQA.

3.2.4.4.1.4 Alternative 4 – Reduced Fill: No South Wharf Extension at Berth 100

Alternative 4 would be similar to the proposed Project except that the proposed 375 feet of linear wharf proposed south of Berth 100 and the 25 acres of backland behind Berth 100 would not be constructed. This alternative would include construction of an additional 925 feet of wharf at Berth 102, to extend north of the existing wharf at Berth 100. No additional rock dike or fill would be required. Five additional A-frame cranes would be installed at Berth 102 in Phase II for a total of nine cranes at the Berth 97-109 Container Terminal (four currently exist). TEU throughput would be less than the proposed Project with an expected throughput of 1,392,000 TEUs by 2030. Section 2.5.1.4 presents a comprehensive description of Alternative 4.

Alt 4 – Impact AQ-1: Alternative 4 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Although this alternative has less wharf construction than the proposed Project, the majority of the construction activities required for the proposed Project would also be required for this alternative. Specifically, emissions for this alternative would be approximated by all of the activities in Tables 3.2-18 and 3.2-20 except for construction of a 375-foot South Extension of Wharf at Berth 100. This approximation would be slightly conservative because 12 fewer acres of backlands construction would occur compared to the proposed Project. Though maximum daily emissions for construction of Alternative 4 would be slightly lower than those from the proposed Project, they would still exceed the SCAQMD daily thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA, and would exceed the thresholds of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under NEPA without mitigation. Detailed emissions calculations of Alternative 4 constructions are presented in Appendix E1.

CEQA Impact Determination

Alternative 4 would exceed the daily construction emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during construction. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation, emissions of VOC would be reduced to a less than significant level. However, despite implementation of mitigation and proposed Project compliance with SCAQMD Rule 403, emissions from the construction of Alternative 4 would still exceed the SCAQMD daily thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant.

NEPA Impact Determination

Alternative 4 would exceed the daily construction emission thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during construction. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation, despite implementation of mitigation and proposed Project compliance with SCAQMD Rule 403, emissions from the construction of Alternative 4 would still exceed the SCAQMD daily thresholds for NO_X, SO_X, and $PM_{2.5}$. Emissions of PM_{10} would be reduced to a less than significant level.

Residual Impacts

The residual air quality impacts would be temporary but significant.

Alt 4 – Impact AQ-2: Alternative 4 construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Although this alternative has less wharf construction than the proposed Project, the majority of the construction activities required for the proposed Project also would be required for this alternative.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

Because the dispersion modeling analysis for unmitigated Phase II and III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ standards, the Phase II activity for Alternative 4 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum 1-hour offsite ambient pollutant concentrations of NO_2 associated with Alternative 4 Phase II and III activities would exceed SCAQMD significance thresholds. Therefore, CEQA impacts would be significant for NO_2 during Phases II and III of construction.

NEPA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

Because the dispersion modeling analysis for unmitigated Phase II and III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ for NEPA, the Phase II activity for Alternative 4 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum 1-hour offsite ambient pollutant concentrations of NO_2 associated with Alternative 3 Phase II and Phase III activities would exceed the SCAQMD significance thresholds. Therefore, NEPA impacts would be significant for NO_2 during Phases II and III of construction.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, offsite ambient concentrations from Phase I construction activities remained significant for NO_X and PM_{10}. However, offsite ambient concentrations from Phases II and III construction activities would be below the significance thresholds for all pollutants.

Residual Impacts

The residual air quality impacts would be temporary but significant for NO_X and PM_{10} in Phase I only.

Alt 4 – Impact AQ-3: Alternative 4 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-16.

Table 3.2-79 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for 4 Project study years: 2005, 2015, 2030, and 2045. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

Table 3.2-79. Average Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	16	42	548	472	49	39
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	154	553	1,502	13	73	67
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**431**	**1,732**	**5,024**	**946**	**344**	**265**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	371	1,507	4,458	936	313	236
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	248	-969	3,949	942	325	246
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	100	210	2,326	1,338	206	165
Ships – Hoteling	28	76	984	841	87	70
Tugboats	1	9	48	0	2	2
Trucks	272	1,165	2,326	4	212	101
Trains	48	167	857	1	26	24
Rail Yard Equipment	3	116	98	0	3	3
Terminal Equipment	57	1,497	1,301	4	44	41
Worker Trips	7	80	11	0	22	4
Total – Project Year 2015	**517**	**3,319**	**7,950**	**2,189**	**602**	**409**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	457	3,094	7,384	2,178	570	380
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	509	2,468	7,878	2,188	599	406

Table 3.2-79. Average Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	142	299	3,298	1,891	292	234
Ships – Hoteling	32	86	1,115	946	99	79
Tugboats	2	12	48	0	2	2
Trucks	150	638	1,344	6	190	54
Trains	47	204	860	1	23	21
Rail Yard Equipment	2	130	18	0	1	1
Terminal Equipment	27	1,757	289	5	8	7
Worker Trips	4	48	5	0	26	5
Total – Project Year 2030	**406**	**3,173**	**6,977**	**2,849**	**640**	**402**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	346	2,948	6,411	2,839	609	373
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	397	2,284	6,901	2,849	637	399
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	142	299	3,298	1,891	292	234
Ships – Hoteling	32	86	1,115	946	99	79
Tugboats	2	12	48	0	2	2
Trucks	140	598	1,273	6	187	51
Trains	42	204	797	1	20	18
Rail Yard Equipment	2	130	18	0	1	1
Terminal Equipment	27	1,757	289	5	8	7
Worker Trips	4	40	4	0	26	5
Total – Project Year 2045	**391**	**3,125**	**6,842**	**2,849**	**634**	**396**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	331	2,900	6,276	2,839	602	367
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-79. Average Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	382	2,257	6,767	2,849	631	394
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The operational emissions associated with this alternative assume the following activity levels:

- Annual container volumes for Berths 97-109 are estimated to be 403,200 TEUs in 2005; 1,066,000 TEUs in 2015; and 1,392,000 TEUs in 2030 and 2045.
- Annual ship calls to Berths 97-109 are estimated to be 52 visits in 2005, 156 visits in 2015, and 208 visits in 2030 and 2045.
- Without mitigation, the VSRP compliance rate was assumed to be 68 percent in 2005, 2015, 2030, and 2045. This represents the actual China Shipping compliance rate from 2005 (pers. comm., Maggay, 2005).
- The fraction of all TEUs moving through on-dock rail (Berth 121-131 ICTF) is estimated to be 19.5 percent in 2005, 21.2 percent in 2015, and 18 percent in 2030 and 2045. The fraction of all TEUs moving through off-dock rail yards is estimated to be 19.1 percent in 2005, 17.4 percent in 2015, and 18.6 percent in 2030 and 2045. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 61.4 percent in 2005, 61.4 percent in 2015, and 63.4 percent in 2030 and 2045.
- This alternative would generate 1,529; 3,941; 4,472; and 4,472 daily truck trips in 2005, 2015, 2030, and 2045 respectively.
- This alternative would generate 448; 1,186; 1,468; and 1,468 annual one-way train trips in 2005, 2015, 2030, and 2045 respectively.

Table 3.2-80 shows the peak daily operational emissions for Alternative 4. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

- Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2005, one 5,000- to 6,000-TEU-capacity vessel arrives and hotels; and (b) in 2010 and beyond, one 5,000- to 6,000-TEU-capacity vessel arrives and hotels, and another 5,000- to 6,000- TEU-capacity vessel hotels and departs. The time each vessel is assumed to hotel equals 24 hours minus the ship transit time between the South Coast Air Basin overwater boundary and the berth.
- Trains and rail yard equipment: (a) In 2005, 2010, and 2015, the peak day scenario for the Berth 121-131 (on-dock) rail yard assumes that the equivalent of one train carrying only Project-generated cargo arrives and is completely disassembled, and a second train carrying only Project-generated cargo is fully assembled and departs. The same assumption is also made for the off-dock rail yards in total. (b) In 2030 and 2045, the peak day scenario for the Berth 121-131 (on-dock) rail yard assumes that the equivalent of two trains carrying only Project-generated cargo arrive and are completely disassembled, and two additional trains carrying only Project-generated cargo are fully assembled and depart. The same assumption is also made for the off-dock rail yards in total.
- Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 33 percent more truck trips on the peak day compared to an average day for 2005, 2010, and 2015, and about 22 percent more truck trips than an average day for 2030 and 2045. The peaking factor is lower in 2030 and 2045 because port activities are assumed to be more evenly spread out during the year due to the higher throughput (that is, all months are assumed to be equally busy).
- Terminal equipment: A peak day factor for cargo-handling equipment was developed by determining the maximum number of TEUs that could be moved in a day relative to the annual TEU throughput. The maximum daily TEU throughput is a composite of the peak day activity at the wharf (ship loading and unloading), gate (truck trips), and Berth 121-131 (on-dock) rail yard (train loading and unloading). Peak daily container throughput at the wharf was calculated assuming all available cranes at the wharf would be simultaneously loading and unloading containers from ships. The number of available cranes would be four in 2005, and nine in 2010 and beyond. Peak daily container throughputs at the gate and on-dock rail yard were determined based on the peak daily truck and train trips, described in the preceding paragraphs. The resulting peak day factors for terminal equipment, relative to an average day of activity, were estimated to be 2.5 for 2005, 3.8 for 2010, 2.5 for 2015, and 2.3 for 2030 and 2045.

Tables 3.2-79 and 3.2-80 show that operational activities and cargo throughput associated with this alternative would be similar to the proposed Project in 2005, and slightly less than the proposed Project in 2015, 2030, and 2045.

Table 3.2-80. Peak Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	379	1,359	3,693	31	179	165
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**945**	**3,428**	**12,785**	**5,651**	**1,027**	**824**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	784	2,822	11,262	5,622	942	747
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	453	-3,840	9,894	5,640	974	774
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	255	544	6,425	6,273	753	602
Ships – Hoteling	70	190	2,516	4,621	392	313
Tugboats	3	21	112	0	4	4
Trucks	364	1,556	3,107	6	283	135
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	4	143	121	0	4	3
Terminal Equipment	144	3,770	3,277	10	111	102
Worker Trips	8	98	13	0	27	5
Total – Project Year 2015	**926**	**6,591**	**16,954**	**10,910**	**1,614**	**1,203**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	764	5,984	15,431	10,882	1,530	1,125
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	906	4,300	16,761	10,910	1,608	1,197

Table 3.2-80. Peak Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	255	544	6,425	6,273	753	602
Ships – Hoteling	70	190	2,516	4,621	392	313
Tugboats	3	21	84	0	4	3
Trucks	183	780	1,645	7	232	66
Trains	123	539	2,265	2	61	56
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	64	4,101	675	12	18	16
Worker Trips	5	59	6	0	32	6
Total – Project Year 2030	**707**	**6,491**	**13,652**	**10,915**	**1,492**	**1,064**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	546	5,885	12,129	10,887	1,407	986
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	685	4,098	13,446	10,914	1,484	1,056
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	255	544	6,425	6,273	753	602
Ships – Hoteling	70	190	2,516	4,621	392	313
Tugboats	3	21	84	0	4	3
Trucks	171	731	1,558	7	229	63
Trains	110	539	2,100	2	52	47
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	64	4,101	675	12	18	16
Worker Trips	4	49	5	0	32	6
Total – Project Year 2045	**682**	**6,433**	**13,399**	**10,915**	**1,479**	**1,052**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	520	5,826	11,876	10,887	1,395	974
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-80. Peak Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	660	4,097	13,195	10,914	1,472	1,045
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Due to a lengthy construction period, operational activities would overlap with construction. Table 3.2-81 shows the combined total of construction and operational emissions for year 2010 during which construction and operation activities would occur simultaneously.

Table 3.2-81. Peak Daily 2010 Construction and Operational Emissions – Alternative 4 Without Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Construct Berth 102	15	57	149	0.15		5
Construct Berth 100-109 Buildings	7	25	56	0.06		3
Construct 18 of 45-acre Backlands	18	62	147	0.15	5	16
Crane Delivery and Installation	46	117	1,302	1,452	154	123
Worker Trips	2	27	4	0.02		0.90
Maximum Daily Construction Emissions	**88**	**287**	**1,657**	**1,453**	**222**	**148**
Operation						
Ships – Transit and Anchoring	255	544	6,425	6,273	753	602
Ships – Hoteling	70	190	2,516	4,621	392	313
Tugboats	3	21	126	0		4
Trucks	402	1,812	3,504	4	265	159
Trains	84	269	1,481	31	4	45
Rail Yard Equipment	4	134	115	0	3	3

Table 3.2-81. Peak Daily 2010 Construction and Operational Emissions – Alternative 4 Without Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Terminal Equipment	149	3,052	2,795	8	95	87
Worker Trips	8	102	14	0	18	4
Maximum Daily Emissions – Operation	**976**	**6,125**	**16,975**	**10,937**	**1,578**	**1,217**
Total – Construction & Operation – Project Year 2010	**1,064**	**6,412**	**18,632**	**12,390**	**1,800**	**1,365**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**903**	**5,805**	**17,109**	**12,362**	**1,715**	**1,287**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**170**	**-9,775**	**15,100**	**12,389**	**1,705**	**1,299**
Thresholds	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

a) CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

b) The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

c) NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

d) The SCAQMD operational thresholds are used in the significance determinations.

CEQA Impact Determination

From a CEQA perspective, Alternative 4 peak-daily emissions are expected to exceed CEQA baseline emissions for all criteria pollutants in all study years. The unmitigated air quality impacts associated with Alternative 4 would be significant for all criteria pollutants in 2005, 2015, 2030, and 2045. In addition, in 2010 the combined total of construction and operational impacts is expected to be significant for all criteria pollutants.

NEPA Impact Determination

From a NEPA perspective, Alternative 4 peak-daily emissions are expected to exceed NEPA baseline emissions for all criteria pollutants in all study years except CO in 2005. The unmitigated air quality impacts associated with Alternative 4 are expected to be significant for all criteria pollutants in all study years except CO in 2005. In addition, in 2010 the combined total of construction and operational impacts is expected to be significant for all criteria pollutants except CO.

Mitigation Measures

MM AQ-9 through **MM AQ-24** would apply to Alternative 4. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Tables 3.2-82 and 3.2-83 show emissions and impacts associated with Alternative 4 for the study years. In addition, Table 3.2-84 shows the combined construction and operation emissions and impacts for 2010, with mitigation.

Table 3.2-82 Average Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	7	20	243	270	24	19
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	183	2,701	1,074	4	20	19
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**451**	**3,859**	**4,292**	**735**	**266**	**197**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	391	3,633	3,726	724	235	168
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	268	1,158	3,218	731	247	178
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	78	154	1,005	59	35	28
Ships – Hoteling	2	10	69	26	6	5
Tugboats	1	9	48	0	2	2
Trucks	95	324	815	1	144	40
Trains	48	167	857	1	26	24
Rail Yard Equipment	2	109	52	0	2	1
Terminal Equipment	10	1,393	99	2	4	4
Worker Trips	7	80	11	0	22	4
Total – Project Year 2015	**242**	**2,247**	**2,955**	**90**	**240**	**108**

Table 3.2-82 Average Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	182	2,021	2,389	79	209	79
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	235	1,395	2,884	89	238	105
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	111	220	1,418	83	49	39
Ships – Hoteling	2	11	77	29	7	6
Tugboats	2	12	48	0	2	2
Trucks	172	512	1,509	0	200	66
Trains	47	204	860	1	23	21
Rail Yard Equipment	2	130	18	0	1	1
Terminal Equipment	14	1,894	134	3	6	6
Worker Trips	4	48	5	0	26	5
Total – Project Year 2030	**354**	**3,031**	**4,068**	**116**	**314**	**146**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	294	2,805	3,502	105	282	117
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	345	2,141	3,992	115	311	143
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	111	220	1,418	83	49	39
Ships – Hoteling	2	11	77	29	7	6
Tugboats	2	12	48	0	2	2
Trucks	172	512	1,509	0	200	66
Trains	42	204	797	1	19	18
Rail Yard Equipment	2	130	18	0	1	1
Terminal Equipment	13	1,848	133	3	6	6

Table 3.2-82 Average Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Worker Trips	4	40	4	0	26	5
Total – Project Year 2045	**348**	**2,977**	**4,002**	**116**	**310**	**142**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	288	2,751	3,436	105	279	113
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	340	2,108	3,927	115	307	140
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation
d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.
e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-83. Peak Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	450	6,644	2,642	10	48	46
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**1,016**	**8,714**	**11,734**	**5,629**	**896**	**706**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	855	8,107	10,211	5,601	812	628
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-83. Peak Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	524	1,445	8,843	5,619	844	656
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	174	340	2,097	117	74	59
Ships – Hoteling	5	22	159	60	15	12
Tugboats	3	21	112	0	4	4
Trucks	126	433	1,090	2	193	53
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	3	135	69	0	2	2
Terminal Equipment	24	3,509	249	5	11	11
Worker Trips	8	98	13	0	27	5
Total – Project Year 2015	**421**	**4,828**	**5,171**	**186**	**367**	**185**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	260	4,222	3,648	157	282	107
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	401	2,537	4,978	185	360	178
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	174	340	2,097	117	74	59
Ships – Hoteling	5	22	159	60	15	12
Tugboats	3	21	84	0	4	3
Trucks	211	627	1,846	0	245	81
Trains	123	539	2,265	2	60	55
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	32	4,421	314	6	15	15
Worker Trips	5	59	6	0	32	6
Total – Project Year 2030	**556**	**6,287**	**6,806**	**186**	**445**	**233**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	395	5,680	5,284	158	361	155

Table 3.2-83. Peak Daily Operational Emissions With Mitigation – Alternative 4

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	534	3,894	6,601	186	437	225
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	174	340	2,097	117	74	59
Ships – Hoteling	5	22	159	60	15	12
Tugboats	3	21	84	0	4	3
Trucks	211	627	1,846	0	245	81
Trains	110	539	2,100	2	51	47
Rail Yard Equipment	4	258	36	1	1	1
Terminal Equipment	30	4,312	309	6	14	14
Worker Trips	4	49	5	0	32	6
Total – Project Year 2045	**542**	**6,169**	**6,636**	**186**	**435**	**224**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	380	5,562	5,113	158	351	146
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	520	3,832	6,433	186	428	216
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-84. Peak Daily 2010 Construction and Operational Emissions – Alternative 4 With Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Construct Berth 102	11	39	116	0	2	2
Construct Berth 100-109 Buildings	5	22	47	0	1	1
Construct 18 of 45-acre Backlands	11	51	113	0	22	6
Crane Delivery and Installation	36	97	1,039	1,208	125	101
Worker Trips	2	27	4	0.02	5	1
Maximum Daily Construction Emissions	**66**	**237**	**1,318**	**1,209**	**155**	**111**
Operation						
Ships – Transit and Anchoring	174	340	2,971	2,766	397	317
Ships – Hoteling	65	175	2,318	4,258	361	289
Tugboats	3	21	126	0	4	4
Trucks	228	1,019	2,313	4	186	87
Trains	84	269	1,481	31	48	45
Rail Yard Equipment	4	134	115	0	3	3
Terminal Equipment	1,457	27,470	5,182	5	78	77
Worker Trips	8	102	14	0	18	4
Maximum Daily Emissions – Operation	**2,023**	**29,531**	**14,520**	**7,064**	**1,095**	**824**
Total – Construction & Operation – Project Year 2010	**2,089**	**29,768**	**15,838**	**8,273**	**1,250**	**935**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**1,928**	**29,161**	**14,315**	**8,245**	**1,165**	**857**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**1,195**	**13,581**	**12,306**	**8,272**	**1,155**	**869**
Thresholds	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

a) CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

b) The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

c) NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

d) The SCAQMD operational thresholds are used in the significance determinations.

From a CEQA perspective, Alternative 4 peak daily emissions after mitigation are expected to exceed CEQA baseline emissions for all criteria pollutants in all study years. The air quality impacts associated with Alternative 4 after mitigation are expected to remain significant for all criteria pollutants in 2005, 2015, 2030, and 2045. In addition, in 2010 the combined total of construction and operational impacts is expected to remain significant for all criteria pollutants.

From a NEPA perspective, Alternative 4 peak daily emissions after mitigation are expected to exceed NEPA baseline emissions for all criteria pollutants in all study years. The air quality impacts associated with Alternative 4 after mitigation are expected to remain significant for all criteria pollutants in 2005, 2015, 2030, and 2045. In addition, in 2010 the combined total of construction and operational impacts is expected to remain significant for all criteria pollutants.

Alt 4 – Impact AQ-4: Alternative 4 operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Dispersion modeling of onsite and offsite Project operational emissions was performed to assess the impact of Alternative 4 on local ambient air concentrations. Construction emissions were added to the operational emissions in the model during the periods where construction emissions overlap with operations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-85 presents the maximum offsite ground-level concentrations of NO_2 and CO Alternative 4 without mitigation. Table 3.2-86 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

Table 3.2-85. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 4 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 4 (µg/m³)	Background Concentration (µg/m³)	Total Ground Level Concentration (µg/m³)	SCAQMD Threshold (µg/m³)
NO_2 [c]	1-hour	1,758	263	**2,021**	338
	Annual	48.5	52.7	**101.2**	56.4
CO	1-hour	1,520	4,809	6,329	23,000
	8-hour	381	4,008	4,389	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-86. Maximum Offsite PM Concentrations Associated with Operation of Alternative 4 without Mitigation

	Maximum Modeled Concentration of Alt. 4 ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment [c] ($\mu g/m^3$)	Ground-Level Concentration NEPA Increment [c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10} 24-hour	13.8	10.2	5.7	**9.3**	**8.2**	2.5
$PM_{2.5}$ 24-hour	11.5	9.4	3.8	**7.6**	**7.7**	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Alternative 4 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents project minus CEQA baseline. The NEPA Increment represents project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

CEQA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2 (1-hour and annual), PM_{10} (24-hour) and $PM_{2.5}$ (24-hour). Therefore, significant impacts under CEQA would occur.

NEPA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2, (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Project operations under Alternative 4 would be the same as measures **MM AQ-9** through **MM AQ-24** described for the proposed Project. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5.

Table 3.2-87 presents the maximum offsite ground-level concentrations of NO_2 and CO for Alternative 4 after mitigation. Table 3.2-88 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments after mitigation.

Table 3.2-87. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 4 With Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 4 (µg/m^3)	Background Concentration (µg/m^3)	Total Ground Level Concentration (µg/m^3)	SCAQMD Threshold (µg/m^3)
NO_2 [c]	1-hour	1,921	263	**2,184**	338
	Annual	41.9	52.7	**94.6**	56.4
CO	1-hour	9,688	4,809	14,497	23,000
	8-hour	2,416	4,008	6,424	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-88. Maximum Offsite PM Concentrations Associated with Operation of Alternative 4 With Mitigation

	Maximum Modeled Concentration of Alt. 4 (µg/m^3)	Maximum Modeled Concentration of CEQA Baseline (µg/m^3)	Maximum Modeled Concentration of NEPA Baseline (µg/m^3)	Ground-Level Concentratio n CEQA Increment [c] (µg/m^3)	Ground-Level Concentration NEPA Increment [c] (µg/m^3)	SCAQMD Threshold (µg/m^3)
PM_{10} 24-hour	9.2	10.2	5.7	**6.5**	**6.2**	2.5
$PM_{2.5}$ 24-hour	7.1	9.4	3.8	**5.2**	**5.3**	2.5

Notes:

a) Exceedances of the threshold are indicated in bold. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 4 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents project minus CEQA baseline. The NEPA Increment represents project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Residual Impacts

From a CEQA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

From a NEPA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

Alt 4 – Impact AQ-5: Alternative 4 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate traffic levels comparable to or less than the traffic generated by the proposed Project. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any Project study year.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

NEPA Impact Determination

Significant impacts under NEPA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 4 – Impact AQ-6: Alternative 4 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

NEPA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and, therefore, significant odor impacts under NEPA are not anticipated.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant.

Alt 4 – Impact AQ-7: Alternative 4 would expose receptors to significant levels of toxic air contaminants.

Operational activities and cargo throughput associated with this alternative would be similar to the proposed Project in 2005, and slightly less than the proposed Project in 2015 and 2030. The main sources of TACs from Alternative 4 operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2004 through 2073. An HRA was performed over this 70-year exposure period.

Table 3.2-89 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for this alternative, CEQA baseline, NEPA baseline, CEQA increment (alternative minus CEQA baseline), and NEPA increment (alternative minus NEPA baseline).

CEQA Impact Determination

Alternative 4 would move slightly fewer TEUs than the proposed Project and, therefore, would have lower DPM emissions and lower health risk impacts. Table 3.2-89 shows that the maximum CEQA cancer risk increment associated with the unmitigated Alternative 4 is predicted to be 78 in a million (78×10^{-6}), at a residential receptor. This risk value exceeds the significance criterion of 10 in a million. The CEQA cancer risk increment would also exceed the threshold at occupational, sensitive, and recreational receptors. These exceedances are considered significant impacts under CEQA.

The maximum chronic hazard index CEQA increment is predicted to be less than the significance threshold of 1.0 at all receptors. The maximum acute hazard index CEQA increment is predicted to be greater than the significance threshold of 1.0 at several receptors, including a residential receptor.

Table 3.2-89. Maximum Health Impacts Associated With Alternative 4 Without Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 4	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	92×10^{-6} (92 in a million)	14×10^{-6} (14 in a million)	**78×10^{-6} (78 in a million)**	9.1×10^{-6} (9.1 in a million)	**83×10^{-6} (83 in a million)**	10×10^{-6} 10 in a million
	Occupational	60×10^{-6} (60 in a million)	11×10^{-6} (11 in a million)	**50×10^{-6} (50 in a million)**	7.5×10^{-6} (7.5 in a million)	**52×10^{-6} (52 in a million)**	
	Sensitive	49×10^{-6} (49 in a million)	2.3×10^{-6} (2.3 in a million)	**47×10^{-6} (47 in a million)**	2.1×10^{-6} (2.1 in a million)	**47×10^{-6} (47 in a million)**	
	Student	1.4×10^{-6} (1.4 in a million)	0.1×10^{-6} (0.1 in a million)	1.3×10^{-6} (1.3 in a million)	0.1×10^{-6} (0.1 in a million)	1.3×10^{-6} (1.3 in a million)	
	Recreational	83×10^{-6} (83 in a million)	18×10^{-6} (18 in a million)	**66×10^{-6} (66 in a million)**	9.9×10^{-6} (9.9 in a million)	**74×10^{-6} (74 in a million)**	
Chronic Hazard Index	Residential	0.22	0.14	0.09	0.12	0.09	1.0
	Occupational	0.62	0.43	0.39	0.39	0.26	
	Sensitive	0.07	0.02	0.05	0.03	0.04	
	Student	0.07	0.02	0.05	0.03	0.04	
	Recreational	0.56	0.43	0.30	0.33	0.25	
Acute Hazard Index	Residential	1.11	0.13	**1.09**	0.24	**1.05**	1.0
	Occupational	1.69	0.22	**1.67**	0.38	**1.60**	
	Sensitive	0.94	0.04	0.90	0.14	0.88	
	Student	0.94	0.04	0.90	0.14	0.88	
	Recreational	1.38	0.22	**1.35**	0.34	**1.27**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type. Ships were conservatively assumed to use fuel with a 4.5 percent sulfur content for the 1-hour acute hazard index calculation.

g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

NEPA Impact Determination

Table 3.2-89 shows that the maximum NEPA cancer risk increment associated with the unmitigated Alternative 4 is predicted to be 83 in a million (83×10^{-6}), at a residential receptor. This risk value exceeds the significance criterion of 10 in a million. The NEPA cancer risk increment would also exceed the threshold at occupational, sensitive, and recreational receptors. These exceedances are considered significant impacts under NEPA.

The maximum chronic hazard index NEPA increment is predicted to be less than the significance threshold of 1.0 at all receptors. The maximum acute hazard index NEPA increment is predicted to be greater than the significance threshold of 1.0 at several receptors, including a residential receptor.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9** through **MM AQ-24** described above for the proposed Project. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-90 presents a summary of the maximum health impacts that would occur with operation of this alternative with mitigation. The data show that the maximum CEQA cancer risk increment after mitigation is predicted to be 19 in a million (19×10^{-6}), at a recreational receptor. This risk value is above the significance threshold of 10 in a million. The CEQA cancer risk increment would also exceed the threshold at residential and occupational receptors. These exceedances are considered significant impacts under CEQA.

The maximum chronic hazard index CEQA increment is predicted to be below the significance threshold of 1.0 at all receptors. The acute hazard index CEQA increment is predicted to be above the significance threshold of 1.0 and, therefore, is considered significant for several receptors, including the residential receptor.

The maximum NEPA cancer risk increment after mitigation is predicted to be 18 in a million (18×10^{-6}), at a recreational receptor. This risk value is above the significance threshold of 10 in a million. The NEPA cancer risk increment would also exceed the threshold at residential and occupational. These exceedances are considered significant impacts under NEPA.

The maximum chronic hazard index NEPA increment is predicted to be below the significance threshold of 1.0 at all receptors. The acute hazard index NEPA increment is predicted to be above the significance threshold of 1.0 and, therefore, is considered significant for several receptors, including the residential receptor.

Table 3.2-91 presents results of the 2009-2078 HRA. The results are provided for information purposes only and were not used to determine significance. However, the 2009-2078 HRA results indicate that the mitigation measures imposed by the Port starting in 2009 would further reduce the maximum cancer risk impacts relative to the 2004-2073 mitigated HRA levels.

Table 3.2-90. Maximum Health Impacts Associated With Alternative 4 With Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 4	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	18×10^{-6} (18 in a million)	14×10^{-6} (14 in a million)	**11×10^{-6}** **(11 in a million)**	9.1×10^{-6} (9.1 in a million)	**10×10^{-6}** **(10 in a million)**	10×10^{-6} 10 in a million
	Occupational	13×10^{-6} (13 in a million)	11×10^{-6} (11 in a million)	**13×10^{-6}** **(13 in a million)**	7.5×10^{-6} (7.5 in a million)	**12×10^{-6}** **(12 in a million)**	
	Sensitive	8.4×10^{-6} (8.4 in a million)	2.3×10^{-6} (2.3 in a million)	6.2×10^{-6} (6.2 in a million)	2.1×10^{-6} (2.1 in a million)	6.3×10^{-6} (6.3 in a million)	
	Student	0.2×10^{-6} (0.2 in a million)	0.1×10^{-6} (0.1 in a million)	0.2×10^{-6} (0.2 in a million)	0.1×10^{-6} (0.1 in a million)	0.2×10^{-6} (0.2 in a million)	
	Recreational	19×10^{-6} (19 in a million)	18×10^{-6} (18 in a million)	**19×10^{-6}** **(19 in a million)**	9.9×10^{-6} (9.9 in a million)	**18×10^{-6}** **(18 in a million)**	
Chronic Hazard Index	Residential	0.18	0.14	0.06	0.12	0.05	1.0
	Occupational	0.52	0.43	0.30	0.39	0.18	
	Sensitive	0.05	0.02	0.03	0.03	0.02	
	Student	0.05	0.02	0.03	0.03	0.02	
	Recreational	0.48	0.43	0.22	0.33	0.16	
Acute Hazard Index	Residential	1.11	0.13	**1.09**	0.24	**1.05**	1.0
	Occupational	1.70	0.22	**1.68**	0.38	**1.61**	
	Sensitive	0.95	0.04	0.91	0.14	0.89	
	Student	0.95	0.04	0.91	0.14	0.89	
	Recreational	1.44	0.22	**1.40**	0.34	**1.32**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-91. Maximum Health Impacts Associated With Alternative 4 With Mitigation, 2009-2078

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 4	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	8.5×10^{-6} (8.5 in a million)	14×10^{-6} (14 in a million)	6.9×10^{-6} (6.9 in a million)	3.6×10^{-6} (3.6 in a million)	7.1×10^{-6} (7.1 in a million)	10×10^{-6} 10 in a million
	Occupational	9.9×10^{-6} (9.9 in a million)	11×10^{-6} (11 in a million)	9.6×10^{-6} (9.6 in a million)	3.0×10^{-6} (3.0 in a million)	9.7×10^{-6} (9.7 in a million)	
	Sensitive	5.3×10^{-6} (5.3 in a million)	2.3×10^{-6} (2.3 in a million)	3.9×10^{-6} (3.9 in a million)	0.8×10^{-6} (0.8 in a million)	4.5×10^{-6} (4.5 in a million)	
	Student	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.02×10^{-6} (0.02 in a million)	0.1×10^{-6} (0.1 in a million)	
	Recreational	14×10^{-6} (14 in a million)	18×10^{-6} (18 in a million)	**14×10^{-6} (14 in a million)**	4.0×10^{-6} (4.0 in a million)	**14×10^{-6} (14 in a million)**	

Notes:

a) The 2009-2078 HRA is for informational purposes only. It shows the risks that would occur over a 70-year exposure period starting in 2009, the first year that the Port is able to implement a wide array of mitigation measures.

b) Exceedances of the significance criteria are in bold. The significance thresholds apply to the CEQA and NEPA increments only.

c) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

d) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

g) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

h) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

i) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Alt 4 – Impact AQ-8: Alternative 4 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 4.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 4 – Impact AQ-9: Alternative 4 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-92 summarizes the total GHG construction emissions associated with Alternative 4. Table 3.2-93 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 4.

Table 3.2-92. Total GHG Emissions from Berth 97 – 109 Terminal Construction Activities – Alternative 4

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.2	0.0	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100 [b]	840	0.1	0.0	846
Crane Delivery and Installation	87	0.0	0.0	87
Berth 100 72-Acre Backlands Development	619	0.1	0.0	623
Construction of Bridge 1	33	0.0	0.0	34
Berth 121 Gate Modifications	29	0.0	0.0	29
Worker Trips	1,025	0.2	0.1	1,073
Phase II				
Construct Berth 102	418	0.0	0.0	421
Construct Berth 100-109 Buildings	90	0.0	0.0	90
Construct 18 of 45-acre Backlands	253	0.0	0.0	255
Construct Bridge 2	34	0.0	0.0	34
Construct 17 of 45-acre Backland	238	0.0	0.0	239
Construct 10 of 45-acre Backlands	141	0.0	0.0	142
Crane Delivery and Installation	153	0.0	0.0	154
Worker Trips	833	0.2	0.1	880
Phase III				
Construct 25-acre Backlands (Behind Berth 100)	375	0.0	0.0	377
Worker Trips	833	0.2	0.1	880
Total Emissions	**7,294**	**1**	**0**	**7,463**
CEQA Impact [e]	**7,294**	**1**	**0**	**7,463**
NEPA Impact [e]	**4,184**	**1**	**0**	**4,252**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total project construction emissions minus NEPA baseline emissions. The NEPA baseline construction emissions are reported in Table 3.2-12.

Table 3.2-93. Annual Operational GHG Emissions – Alternative 4 – without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	6,015	0.8	0.1	0	0	0	6,049
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	19,857	1.9	0.2	0	0	0	19,970
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**175,884**	**12.8**	**3.8**	**0.07**	**0.17**	**0.09**	**178,080**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**173,451**	**12.0**	**3.8**	**0.07**	**0.17**	**0.09**	**175,622**
NEPA Baseline	24,126	21	0	0	0	0	24,668
Project Minus NEPA Baseline	**151,758**	**-8.1**	**3.5**	**0.07**	**0.17**	**0.09**	**153,412**
Project Year 2015							
Ships – Transit	58,272	7.7	0.5	0	0	0	58,593
Ships – Hoteling	10,713	1.4	0.1	0	0	0	10,773
Tugboats	517	0.1	0.0	0	0	0	520
Trucks	344,618	17.2	8.6	0	0	0	347,642
Trains	19,321	2.7	0.2	0	0	0	19,437
Rail Yard Equipment	4,044	0.0	0.0	0	0	0	4,059
Terminal Equipment	52,499	0.7	0.6	0	0	0	52,706
Reefer Refrigerant Losses	0	0.0	0.0	0.19	0.45	0.22	1,971
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	4,509	0.0	0.0	0	0	0	4,517
Worker Trips	1,984	0.6	0.3	0	0	0	2,095
Total For Project Year 2015	**496,477**	**30.4**	**10.4**	**0.19**	**0.45**	**0.22**	**502,313**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**494,044**	**29.7**	**10.4**	**0.19**	**0.45**	**0.22**	**499,855**
NEPA Baseline	28,259	0.9	0.1	0	0	0	28,295
Project Minus NEPA Baseline	**468,218**	**29.5**	**10.4**	**0.19**	**0.45**	**0.22**	**474,018**
Project Year 2030							
Ships – Transit	82,733	10.9	0.7	0	0	0	83,188

Table 3.2-93. Annual Operational GHG Emissions – Alternative 4 – without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Ships – Hoteling	12,044	1.6	0.1	0	0	0	12,112
Tugboats	689	0.1	0.0	0	0	0	693
Trucks	411,528	20.0	10.0	0	0	0	415,044
Trains	22,649	3.2	0.2	0	0	0	22,785
Rail Yard Equipment	5,004	0.0	0.1	0	0	0	5,022
Terminal Equipment	68,555	0.3	0.8	0	0	0	68,812
Reefer Refrigerant Losses	0	0.0	0.0	0.25	0.59	0.29	2,574
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	5,889	0.0	0.0	0	0	0	5,898
Worker Trips	2,380	0.7	0.4	0	0	0	2,514
Total Project Year 2030	**611,470**	**36.9**	**12.3**	**0.25**	**0.59**	**0.29**	**618,642**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**609,036**	**36.1**	**12.3**	**0.25**	**0.59**	**0.29**	**616,185**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**583,179**	**35.9**	**12.3**	**0.25**	**0.59**	**0.29**	**590,315**
Project Year 2045							
Ships – Transit	82,733	10.9	0.7	0	0	0	83,188
Ships – Hoteling	12,044	1.6	0.1	0	0	0	12,112
Tugboats	689	0.1	0.0	0	0	0	693
Trucks	411,694	20.0	10.0	0	0	0	415,210
Trains	22,649	3.2	0.2	0	0	0	22,785
Rail Yard Equipment	5,004	0.0	0.1	0	0	0	5,022
Terminal Equipment	68,555	0.3	0.8	0	0	0	68,812
Reefer Refrigerant Losses	0	0.0	0.0	0.25	0.59	0.29	2,574
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	5,889	0.0	0.0	0	0	0	5,898
Worker Trips	2,432	0.7	0.4	0	0	0	2,568
Total Project Year 2045	**611,687**	**36.9**	**12.3**	**0.25**	**0.59**	**0.29**	**618,862**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**609,254**	**36.1**	**12.3**	**0.25**	**0.59**	**0.29**	**616,405**
NEPA Baseline	28,291	0.9	0.1	0.0	0	0	28,327
Project Minus NEPA Baseline	**583,396**	**36.0**	**12.3**	**0.25**	**0.59**	**0.29**	**590,536**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

CEQA Impact Determination

Table 3.2-92 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-93 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 4 would produce significant levels of GHG emissions under CEQA.

NEPA Impact Determination

Table 3.2-92 shows that total CO_2e emissions during project construction would exceed NEPA baseline construction emissions. In addition, the data in Table 3.2-93 show that in each future Project year, annual operational CO_2e emissions would increase from NEPA baseline levels.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 4 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2** through **MM AQ-4** for construction; and **MM AQ-9**, **MM AQ-10, MM AQ-17, MM AQ-20, MM AQ-21,** and **MM AQ-25** through **MM AQ-30** for operations.

Table 3.2-94 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP), **MM AQ-10** (VSRP), **MM AQ-17** (yard equipment), and **MM AQ-20** (LNG trucks) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for **Impact AQ-9**.

Table 3.2-94. Annual Operational GHG Emissions – Alternative 4 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	3,441	0.5	0.0	0	0	0	3,460
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	22,420	20.9	0.3	0	0	0	22,959
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	1,318	0.0	0.0	0	0	0	1,320.4
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**177,191**	**31.5**	**3.9**	**0.07**	**0.17**	**0.09**	**179,800**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**174,757**	**30.7**	**3.9**	**0.07**	**0.17**	**0.09**	**177,343**
NEPA Baseline	24,126	20.9	0.3	0	0	0	24,668

Table 3.2-94. Annual Operational GHG Emissions – Alternative 4 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Minus NEPA Baseline	**153,065**	**10.5**	**3.6**	**0.07**	**0.17**	**0.09**	**155,133**
Project Year 2015							
Ships – Transit	21,962	3.0	0.2	0	0	0	22,093
Ships – Hoteling	2,918	0.4	0.0	0	0	0	2,935
Tugboats	517	0.1	0.0	0	0	0	520
Trucks	179,375	423.7	8.6	0	0	0	190,936
Trains	19,321	2.7	0.2	0	0	0	19,437
Rail Yard Equipment	4,044	0.0	0.0	0	0	0	4,059
Terminal Equipment	40,741	1.4	0.0	0	0	0	40,779
Reefer Refrigerant Losses	0	0.0	0.0	0.19	0.45	0.22	1,971
AMP Usage	3,953	0.0	0.0	0	0	0	3,958.8
On-Terminal Electricity Usage	4,509	0.0	0.0	0	0	0	4,517
Worker Trips	1,984	0.6	0.3	0	0	0	2,095
Total For Project Year 2015	**279,322**	**432.0**	**9.5**	**0.19**	**0.45**	**0.22**	**293,301**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**276,889**	**431.3**	**9.5**	**0.19**	**0.45**	**0.22**	**290,844**
NEPA Baseline	28,259	0.9	0.1	0	0	0	28,295
Project Minus NEPA Baseline	**251,063**	**431.2**	**9.4**	**0.19**	**0.45**	**0.22**	**265,006**
Project Year 2030							
Ships – Transit	30,869	4.3	0.3	0	0	0	31,053
Ships – Hoteling	3,205	0.5	0.1	0	0	0	3,225
Tugboats	689	0.1	0.0	0	0	0	693
Trucks	124,723	695.3	10.0	0	0	0	142,420
Trains	22,649	3.2	0.2	0	0	0	22,785
Rail Yard Equipment	5,004	0.0	0.1	0	0	0	5,022
Terminal Equipment	53,200	2.0	0.0	0	0	0	53,252
Reefer Refrigerant Losses	0	0.0	0.0	0.25	0.59	0.29	2,574
AMP Usage	4,483	0.0	0.0	0	0	0	4,490.5
On-Terminal Electricity Usage	5,889	0.0	0.0	0	0	0	5,898
Worker Trips	2,380	0.7	0.4	0	0	0	2,514
Total Project Year 2030	**253,091**	**706.0**	**11.1**	**0.25**	**0.59**	**0.29**	**273,927**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**250,657**	**705.3**	**11.1**	**0.25**	**0.59**	**0.29**	**271,469**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**224,800**	**705.1**	**11.0**	**0.25**	**0.59**	**0.29**	**245,599**
Project Year 2045							
Ships – Transit	30,869	4.3	0.3	0	0	0	31,053

Table 3.2-94. Annual Operational GHG Emissions – Alternative 4 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Ships – Hoteling	3,205	0.5	0.1	0	0	0	3,225
Tugboats	689	0.1	0.0	0	0	0	693
Trucks	124,723	695.3	10.0	0	0	0	142,420
Trains	22,649	3.2	0.2	0	0	0	22,785
Rail Yard Equipment	5,004	0.0	0.1	0	0	0	5,022
Terminal Equipment	53,200	1.9	0.0	0	0	0	53,250
Reefer Refrigerant Losses	0	0.0	0.0	0.25	0.59	0.29	2,574
AMP Usage	4,483	0.0	0.0	0	0	0	4,490.5
On-Terminal Electricity Usage	5,889	0.0	0.0	0	0	0	5,898
Worker Trips	2,432	0.7	0.4	0	0	0	2,568
Total Project Year 2045	**253,142**	**706.0**	**11.1**	**0.25**	**0.59**	**0.29**	**273,979**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**250,709**	**705.2**	**11.1**	**0.25**	**0.59**	**0.29**	**271,522**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**224,851**	**705.1**	**11.1**	**0.25**	**0.59**	**0.29**	**245,653**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

Residual Impacts

Significant impacts would remain under CEQA.

3.2.4.4.1.5 Alternative 5 – Reduced Construction and Operation: Phase I Construction Only

Under Alternative 5, the Phase I terminal (completed in 2003 as allowed by the ASJ) would operate at levels similar to today (2007). The total acreage of backlands under this alternative would be 72 acres. Existing equipment and facilities on the proposed Project site would remain, including four A-frame cranes along the wharf, the bridge connecting Berths 121-131 to Berths 97-109, the paved backlands used for container storage, terminal, and gate buildings, mobile equipment used to handle containers, and 1,200 linear feet of wharves and the 1.3 acres of fill associated with the wharf construction. Under this alternative, however, Phase II and Phase III construction elements would not be constructed, including the Berth 102 wharf and the Berth 100 south extension construction, six additional cranes, the second bridge connecting Berths 97-109 and Berths 121-131, and 70 additional terminal acres.

Under Alternative 5, China Shipping would operate the terminal under a 40-year lease. The lease would include AMP and terminal equipment provisions consistent with the ASJ.

TEU throughput would be less than the proposed Project with an expected throughput of 630,000 by 2030. Section 2.5.1.5 presents a comprehensive description of Alternative 5.

Alt 5 – Impact AQ-1: Alternative 5 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Alternative 5 would only have Phase I constructed. The Phase I emissions would exceed the SCAQMD daily thresholds for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ without mitigation.

CEQA Impact Determination

Alternative 5 exceeded the daily construction emission thresholds for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phase I construction. Therefore, significant impacts under CEQA would occur.

This alternative would have no Phase II or III impacts.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** was applied to Phase I construction. After mitigation, emissions from the construction of Alternative 5 still exceeded the SCAQMD daily thresholds for VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts were temporary but significant.

NEPA Impact Determination

Alternative 5 exceeded the daily construction emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phase I construction. Therefore, significant impacts under NEPA would occur. This alternative would have no Phase II or III impacts.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** was applied to Phase I construction. After mitigation, emissions from the construction of Alternative 5 still exceeded the SCAQMD daily thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts were temporary but significant.

Alt 5 – Impact AQ-2: Alternative 5 construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Alternative 5 would only have Phase I constructed.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

NEPA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I of construction. Despite implementation of this mitigation measure, offsite ambient concentrations from Phase I construction activities remained significant for NO_X and PM_{10}.

Residual Impacts

The residual air quality impacts were temporary but significant for NO_X and PM_{10} in Phase I.

Alt 5 – Impact AQ-3: Alternative 5 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-16.

Table 3.2-95 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for 4 Project study years: 2005, 2015, 2030, and 2045. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with this alternative assume the following activity levels:

- Annual container volumes for Berths 97-109 are estimated to be 403,200 TEUs in 2005; 496,800 TEUs in 2015; and 630,000 TEUs in 2030 and 2045.
- Annual ship calls to Berths 97-109 are estimated to be 52 visits in 2005, 78 visits in 2015, and 104 visits in 2030 and 2045.
- Without mitigation, the VSRP compliance rate was assumed to be 68 percent in 2005, 2015, 2030, and 2045. This represents the actual China Shipping compliance rate in 2005 (pers. comm., Maggay, 2005).
- The fraction of all TEUs moving through on-dock rail (Berth 121-131 ICTF) is estimated to be 19.5 percent in 2005, 28.7 percent in 2015, and 25.5 percent in 2030 and 2045. The fraction of all TEUs moving through off-dock rail yards is estimated to be 19.1 percent in 2005, 9.9 percent in 2015, and 11 percent in 2030 and 2045. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 61.4 percent in 2005, 61.4 percent in 2015, and 63.5 percent in 2030 and 2045.
- This alternative would generate 1,529; 1,632; 1,796; and 1,796 daily truck trips in 2005, 2015, 2030, and 2045, respectively.
- This alternative would generate 448; 552; 664; and 664 annual one-way train trips in 2005, 2015, 2030, and 2045, respectively.

Table 3.2-95. Average Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	16	42	548	472	49	39
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	154	553	1,502	13	73	67
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**431**	**1,732**	**5,024**	**946**	**344**	**265**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	371	1,507	4,458	936	313	236
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	248	-969	3,949	942	325	246
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	50	105	1,163	669	103	82
Ships – Hoteling	13	35	461	394	41	33
Tugboats	1	4	24	0	1	1
Trucks	112	481	960	2	87	42
Trains	23	81	414	0	12	11
Rail Yard Equipment	1	54	46	0	1	1
Terminal Equipment	27	698	606	2	21	19
Worker Trips	3	37	5	0	10	2
Total – Project Year 2015	**231**	**1,496**	**3,679**	**1,067**	**277**	**191**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	171	1,270	3,113	1,057	245	162
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-95. Average Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	223	644	3,607	1,067	274	189
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	71	149	1,649	946	146	117
Ships – Hoteling	14	39	509	432	45	36
Tugboats	1	6	24	0	1	1
Trucks	60	255	538	2	76	21
Trains	22	96	404	0	11	10
Rail Yard Equipment	1	59	8	0	0	0
Terminal Equipment	12	795	131	2	3	3
Worker Trips	2	22	2	0	12	2
Total – Project Year 2030	**184**	**1,422**	**3,266**	**1,383**	**294**	**191**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	124	1,196	2,700	1,373	263	162
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	175	532	3,190	1,383	292	188
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	71	149	1,649	946	146	117
Ships – Hoteling	14	39	509	432	45	36
Tugboats	1	6	24	0	1	1
Trucks	56	239	510	2	75	20
Trains	20	96	375	0	9	8
Rail Yard Equipment	1	59	8	0	0	0
Terminal Equipment	12	795	131	2	3	3
Worker Trips	2	18	2	0	12	2
Total – Project Year 2045	**177**	**1,402**	**3,208**	**1,383**	**292**	**189**

Table 3.2-95. Average Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
<u>**CEQA Impacts**</u>						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	117	1,177	2,642	1,373	260	160
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
<u>**NEPA Impacts**</u>						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	169	534	3,133	1,383	289	186
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-96 shows and the peak daily emissions and impacts associated with Alternative 5. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

- Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2005, one 5,000- to 6,000-TEU-capacity vessel arrives and hotels; (b) in 2010 and 2015, one 8,000- to 9,000-TEU-capacity vessel arrives and hotels; (c) and in 2030 and 2045, one 9,000- to 11,000-TEU-capacity vessel arrives and hotels. The time each vessel is assumed to hotel equals 24 hours minus the ship transit time between the South Coast Air Basin overwater boundary and the berth.
- Trains and rail yard equipment: (a) In all analysis years, the peak day scenario for the Berth 121-131 (on-dock) rail yard assumes that the equivalent of one train carrying only Project-generated cargo arrives and is completely disassembled, and a second train carrying only Project-generated cargo is fully assembled and departs. The same assumption is also made for the off-dock rail yards in total.
- Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 33 percent more truck trips on the peak day compared to an average day for 2005, 2010, and 2015, and about 22 percent more truck trips than an average day for 2030 and 2045. The

peaking factor is lower in 2030 and 2045 because port activities are assumed to be more evenly spread out during the year due to the higher throughput (that is, all months are assumed to be equally busy).

- Terminal equipment: A peak day factor for cargo-handling equipment was developed by determining the maximum number of TEUs that could be moved in a day relative to the annual TEU throughput. The maximum daily TEU throughput is a composite of the peak day activity at the wharf (ship loading and unloading), gate (truck trips), and Berth 121-131 (on-dock) rail yard (train loading and unloading). Peak daily container throughput at the wharf was calculated assuming all available cranes at the wharf would be simultaneously loading and unloading containers from ships. The number of available cranes would be four in all analysis years. Peak daily container throughputs at the gate and on-dock rail yard were determined based on the peak-daily truck and train trips, described in the preceding paragraphs. The resulting peak-day factors for terminal equipment, relative to an average day of activity, were estimated to be 2.5 for 2005, 2.6 for 2010, 2.5 for 2015, and 2.3 for 2030 and 2045.

Table 3.2-96. Peak Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	379	1,359	3,693	31	179	165
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**945**	**3,428**	**12,785**	**5,651**	**1,027**	**824**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	784	2,822	11,262	5,622	942	747
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	453	-3,840	9,894	5,640	974	774
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	181	377	4,428	4,268	521	416
Ships – Hoteling	39	105	1,386	2,484	214	171
Tugboats	1	10	56	0	2	2
Trucks	150	642	1,283	2	117	56

Table 3.2-96. Peak Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	4	143	121	0	4	3
Terminal Equipment	67	1,756	1,527	5	52	48
Worker Trips	4	46	6	0	12	2
Total – Project Year 2015	**524**	**3,349**	**10,190**	**6,761**	**963**	**737**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	362	2,742	8,667	6,733	878	659
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	504	1,058	9,997	6,760	956	730
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	193	402	4,717	4,532	554	443
Ships – Hoteling	39	105	1,386	2,484	214	171
Tugboats	1	10	42	0	2	2
Trucks	73	312	658	3	93	26
Trains	61	269	1,133	1	30	28
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	28	1,811	298	5	8	7
Worker Trips	2	27	3	0	14	3
Total – Project Year 2030	**400**	**3,065**	**8,255**	**7,025**	**915**	**680**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	239	2,458	6,732	6,997	831	603
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	378	672	8,049	7,025	908	673
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	193	402	4,717	4,532	554	443
Ships – Hoteling	39	105	1,386	2,484	214	171

Table 3.2-96. Peak Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Tugboats	1	10	42	0	2	2
Trucks	68	293	624	3	92	25
Trains	55	269	1,050	1	26	24
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	28	1,811	298	5	8	7
Worker Trips	2	22	2	0	14	3
Total – Project Year 2045	**389**	**3,041**	**8,137**	**7,025**	**910**	**675**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	227	2,435	6,614	6,997	825	597
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	367	705	7,934	7,025	902	668
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Because Alternative 5 would have no Phase II construction, there would be no overlap of construction and operational emissions. Hence, Table 3.2-97 shows the operational peak daily emissions and impacts associated with the year 2010, without any overlapping construction emissions.

Table 3.2-97. Peak Daily 2010 Construction and Operational Emissions – Alternative 5 Without Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
No Phase II/III Construction Emissions for Alternative 5						
Operation						
Ships – Transit and Anchoring	181	377	4,428	4,268	521	416
Ships – Hoteling	39	105	1,386	2,484	214	171
Tugboats	1	10	63	0	2	2
Trucks	225	1,014	1,961	2	148	89
Trains	84	269	1,481	31	48	45
Rail Yard Equipment	4	134	115	0	3	3
Terminal Equipment	76	1,558	1,426	4	48	45
Worker Trips	5	63	8	0	11	2
Total – Construction & Operation – Project Year 2010	**616**	**3,530**	**10,868**	**6,791**	**996**	**773**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**455**	**2,923**	**9,345**	**6,763**	**911**	**695**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**-278**	**-12,657**	**7,336**	**6,790**	**901**	**707**
Thresholds	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

[a] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[b] The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

[c] NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

[d] The SCAQMD operational thresholds are used in the significance determinations.

CEQA Impact Determination

From a CEQA perspective, Alternative 5 peak daily emissions are expected to exceed CEQA baseline emissions for all criteria pollutants in all study years. The unmitigated air quality impacts associated with Alternative 5 would be significant for all criteria pollutants in 2005, 2010, 2015, 2030, and 2045.

NEPA Impact Determination

From a NEPA perspective, Alternative 5 peak daily emissions are expected to exceed NEPA baseline emissions for all criteria pollutants in all study years, with the exception of CO in 2005, and VOC and CO in 2010. The unmitigated air quality impacts associated with Alternative 5 are expected to be significant for all criteria pollutants except CO in 2005; all criteria pollutants except VOC and CO in 2010; and all criteria pollutants in 2015, 2030, and 2045.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Alternative 5 operations would be the same as measures **MM AQ-9** through **MM AQ-24** described for the proposed Project.

Residual Impacts

Tables 3.2-98 and 3.2-99 show average and peak daily operational emissions and impacts associated with Alternative 5 after mitigation. Table 3.2-100 shows the operational peak daily emissions for year 2010, without any overlapping construction emissions.

From a CEQA perspective, Alternative 5 peak daily air emissions after mitigation are expected to exceed baseline emissions for all criteria pollutants in all study years. The air quality impacts associated with Alternative 5 after mitigation are expected to remain significant for all criteria pollutants in 2005 and 2010; and for VOC, CO, and NO_X in 2015, 2030, and 2045. Emissions of SO_X, PM_{10}, and $PM_{2.5}$ would be reduced to less than significant levels in 2015, 2030, and 2045.

From a NEPA perspective, Alternative 5 peak daily emissions after mitigation are expected to be greater than NEPA baseline emissions for all criteria pollutants in 2005, 2010, 2015, 2030, and 2045, with the exception of CO in 2010. The air quality impacts associated with Alternative 5 after mitigation are expected to be significant for all pollutants in 2005; all pollutants except CO in 2010, and VOC, NO_X, PM_{10}, and PM2.5 in 2015, 2030, and 2045. Emissions of CO and SO_X would be reduced to less than significant levels in 2015, 2030, and 2045.

Table 3.2-98. Average Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	31	65	725	419	64	51
Ships – Hoteling	7	20	243	270	24	19
Tugboats	1	3	19	1	1	1
Trucks	189	894	1,663	12	129	86

Table 3.2-98. Average Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Trains	23	64	444	29	15	14
Rail Yard Equipment	11	40	114	1	5	5
Terminal Equipment	183	2,701	1,074	4	20	19
Worker Trips	6	71	9	0	8	2
Total – Project Year 2005	**451**	**3,859**	**4,292**	**735**	**266**	**197**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	391	3,633	3,726	724	235	168
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	268	1,158	3,218	731	247	178
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	39	77	502	30	17	14
Ships – Hoteling	1	5	32	12	3	3
Tugboats	1	4	24	0	1	1
Trucks	39	134	337	1	60	16
Trains	23	81	414	0	12	11
Rail Yard Equipment	1	50	17	0	1	0
Terminal Equipment	4	649	46	1	2	2
Worker Trips	3	37	5	0	10	2
Total – Project Year 2015	**111**	**1,037**	**1,377**	**44**	**106**	**49**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	51	812	811	33	74	20
Thresholds	55	550	55	150	150	55
Significant?	**No**	**Yes**	**Yes**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	104	186	1,305	44	103	47
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**No**	**No**	**No**

Table 3.2-98. Average Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2030						
Ships – Transit and Anchoring	55	110	709	41	24	20
Ships – Hoteling	1	5	35	13	3	3
Tugboats	1	6	24	0	1	1
Trucks	69	205	603	0	80	26
Trains	22	96	404	0	11	10
Rail Yard Equipment	1	59	8	0	0	0
Terminal Equipment	6	857	61	1	3	3
Worker Trips	2	22	2	0	12	2
Total – Project Year 2030	**157**	**1,360**	**1,847**	**56**	**134**	**65**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	97	1,134	1,281	46	103	36
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	149	470	1,771	56	131	62
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**No**	**No**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	55	110	709	41	24	20
Ships – Hoteling	1	5	35	13	3	3
Tugboats	1	6	24	0	1	1
Trucks	69	205	603	0	80	26
Trains	20	96	375	0	9	8
Rail Yard Equipment	1	59	8	0	0	0
Terminal Equipment	6	836	60	1	3	3
Worker Trips	2	18	2	0	12	2
Total – Project Year 2045	**154**	**1,335**	**1,816**	**56**	**133**	**63**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	94	1,109	1,250	46	101	34
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**

Table 3.2-98. Average Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	146	467	1,741	56	130	60
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**No**	**No**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-99. Peak Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	252	1,194	2,222	16	172	115
Trains	100	274	1,904	124	66	61
Rail Yard Equipment	37	131	371	3	18	16
Terminal Equipment	450	6,644	2,642	10	48	46
Worker Trips	8	87	12	0	10	2
Total – Project Year 2005	**1,016**	**8,714**	**11,734**	**5,629**	**896**	**706**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	855	8,107	10,211	5,601	812	628
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	524	1,445	8,843	5,619	844	656
Thresholds	55	550	55	150	150	55

Table 3.2-99. Peak Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	125	237	1,433	78	51	41
Ships – Hoteling	2	12	83	30	8	6
Tugboats	1	10	56	0	2	2
Trucks	52	179	450	1	80	22
Trains	78	269	1,383	1	42	38
Rail Yard Equipment	3	135	69	0	2	2
Terminal Equipment	11	1,635	116	2	5	5
Worker Trips	4	46	6	0	12	2
Total – Project Year 2015	**277**	**2,523**	**3,596**	**113**	**202**	**119**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	115	1,916	2,073	85	117	41
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	256	232	3,403	112	195	112
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	133	251	1,504	82	54	44
Ships – Hoteling	2	12	83	30	8	6
Tugboats	1	10	42	0	2	2
Trucks	84	251	738	0	98	32
Trains	61	269	1,133	1	30	28
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	14	1,952	138	3	7	6
Worker Trips	2	27	3	0	14	3
Total – Project Year 2030	**301**	**2,901**	**3,659**	**116**	**213**	**121**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	140	2,294	2,137	88	129	43
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**

Table 3.2-99. Peak Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	279	508	3,454	115	206	114
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	133	251	1,504	82	54	44
Ships – Hoteling	2	12	83	30	8	6
Tugboats	1	10	42	0	2	2
Trucks	84	251	738	0	98	32
Trains	55	269	1,050	1	25	23
Rail Yard Equipment	2	129	18	0	1	0
Terminal Equipment	13	1,904	137	3	6	6
Worker Trips	2	22	2	0	14	3
Total – Project Year 2045	**294**	**2,849**	**3,575**	**116**	**208**	**117**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	132	2,242	2,052	88	124	39
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	272	513	3,371	115	201	110
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-100. Peak Daily 2010 Construction and Operational Emissions – Alternative 5 With Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
No Phase II/III Construction Emissions for Alternative 5						
Operation						
Ships – Transit and Anchoring	125	237	2,044	1,843	274	219
Ships – Hoteling	36	96	1,276	2,288	197	158
Tugboats	1	10	63	0	2	2
Trucks	128	571	1,297	2	105	48
Trains	84	269	1,481	31	48	45
Rail Yard Equipment	4	134	115	0	3	3
Terminal Equipment	743	14,018	2,645	2	40	39
Worker Trips	5	63	8	0	11	2
Total – Construction & Operation – Project Year 2010	**1,127**	**15,399**	**8,930**	**4,167**	**680**	**516**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**966**	**14,792**	**7,407**	**4,139**	**595**	**438**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**233**	**-788**	**5,398**	**4,166**	**585**	**450**
Thresholds	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

a) CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

b) The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

c) NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

d) The SCAQMD operational thresholds are used in the significance determinations.

Alt 5 – Impact AQ-4: Alternative 5 operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Dispersion modeling of onsite and offsite Project operational emissions was performed to assess the impact of Alternative 5 on local ambient air concentrations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-101 presents the maximum offsite ground-level concentrations of NO_2 and CO for Alternative 5 without mitigation. Table 3.2-102 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

Table 3.2-101. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 5 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 5 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	1,727	263	**1,990**	338
	Annual	47.8	52.7	**100.5**	56.4
CO	1-hour	775	4,809	5,584	23,000
	8-hour	200	4,008	4,208	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

Table 3.2-102. Maximum Offsite PM Concentrations Associated with Operation of Alternative 5 without Mitigation

	Maximum Modeled Concentration of Alt. 5 ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment [c] ($\mu g/m^3$)	Ground-Level Concentration NEPA Increment [c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10} 24-hour	13.8	10.2	5.7	**10.8**	**8.6**	2.5
$PM_{2.5}$ 24-hour	12.5	9.4	3.8	**9.9**	**9.1**	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 5 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents project minus CEQA baseline. The NEPA Increment represents project minus NEPA baseline.

CEQA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2 (1-hour and annual), PM_{10} (24-hour) and $PM_{2.5}$ (24-hour). Therefore, significant impacts under CEQA would occur.

NEPA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Alternative 5 operations would be the same as measures **MM AQ-9** through **MM AQ-24** described for the proposed Project. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5.

Table 3.2-103 presents the maximum offsite ground-level concentrations of NO_2 and CO for Alternative 5 after mitigation. Table 3.2-104 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments after mitigation.

Table 3.2-103. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 5 With Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 5 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	1-hour	1,623	263	**1,886**	338
	Annual	36.1	52.7	**88.8**	56.4
CO	1-hour	5,661	4,809	10,470	23,000
	8-hour	1,457	4,008	5,465	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

Table 3.2-104. Maximum Offsite PM Concentrations Associated with Operation of Alternative 5 With Mitigation

	Maximum Modeled Concentration of Alt. 5 (µg/m^3)	Maximum Modeled Concentration of CEQA Baseline (µg/m^3)	Maximum Modeled Concentration of NEPA Baseline (µg/m^3)	Ground-Level Concentration CEQA Increment [c] (µg/m^3)	Ground-Level Concentration NEPA Increment [c] (µg/m^3)	SCAQMD Threshold (µg/m^3)
PM_{10} 24-hour	5.6	10.2	5.7	**3.9**	**3.7**	2.5
$PM_{2.5}$ 24-hour	5.1	9.4	3.8	**3.3**	**3.4**	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared **to** the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 5 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents project minus CEQA baseline. The NEPA Increment represents project minus NEPA baseline.

Residual Impacts

From a CEQA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

From a NEPA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

Alt 5 – Impact AQ-5: Alternative 5 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate traffic levels comparable to or less than the traffic generated by the proposed Project. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any Project study year.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

NEPA Impact Determination

Significant impacts under NEPA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 5 – Impact AQ-6: Alternative 5 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

NEPA Impact Determination

As a result of the above, the potential is low for the Project to produce objectionable odors that would affect a sensitive receptor; and, therefore, significant odor impacts under NEPA are not anticipated.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 5 – Impact AQ-7: Alternative 5 would expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 5 operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2004 through 2073. An HRA was performed over this 70-year exposure period.

Table 3.2-105 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for this alternative, CEQA baseline, NEPA baseline, CEQA increment (alternative minus CEQA baseline), and NEPA increment (alternative minus NEPA baseline).

Table 3.2-105. Maximum Health Impacts Associated With The Alternative 5 Without Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 5	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	61×10^{-6} (61 in a million)	14×10^{-6} (14 in a million)	**47×10^{-6} (47 in a million)**	9.1×10^{-6} (9.1 in a million)	**52×10^{-6} (52 in a million)**	10×10^{-6} 10 in a million
	Occupational	40×10^{-6} (40 in a million)	11×10^{-6} (11 in a million)	**37×10^{-6} (37 in a million)**	7.5×10^{-6} (7.5 in a million)	**34×10^{-6} (34 in a million)**	
	Sensitive	29×10^{-6} (29 in a million)	2.3×10^{-6} (2.3 in a million)	**27×10^{-6} (27 in a million)**	2.1×10^{-6} (2.1 in a million)	**27×10^{-6} (27 in a million)**	
	Student	0.8×10^{-6} (0.8 in a million)	0.1×10^{-6} (0.1 in a million)	0.8×10^{-6} (0.8 in a million)	0.1×10^{-6} (0.1 in a million)	0.8×10^{-6} (0.8 in a million)	
	Recreational	59×10^{-6} (59 in a million)	18×10^{-6} (18 in a million)	**48×10^{-6} (48 in a million)**	9.9×10^{-6} (9.9 in a million)	**49×10^{-6} (49 in a million)**	
Chronic Hazard Index	Residential	0.22	0.14	0.09	0.12	0.10	1.0
	Occupational	0.64	0.43	0.51	0.39	0.31	
	Sensitive	0.06	0.02	0.04	0.03	0.03	
	Student	0.06	0.02	0.04	0.03	0.03	
	Recreational	0.61	0.43	0.37	0.33	0.31	
Acute Hazard Index	Residential	1.14	0.13	**1.12**	0.24	**1.07**	1.0
	Occupational	1.99	0.22	**1.97**	0.38	**1.91**	
	Sensitive	0.93	0.04	0.90	0.14	0.87	
	Student	0.93	0.04	0.90	0.14	0.87	
	Recreational	1.31	0.22	**1.27**	0.34	**1.19**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and (2) one ship harbor transiting, turning, and docking. The scenario that yielded the highest result is reported for each impact type. Ships were conservatively assumed to use fuel with a 4.5 percent sulfur content for the 1-hour acute hazard index calculation.

g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

CEQA Impact Determination

Table 3.2-105 shows that the maximum CEQA cancer risk increment associated with the unmitigated Alternative 5 is predicted to be 48 in a million (48×10^{-5}), at a recreational receptor. This risk value exceeds the significance criterion of 10 in a million. The CEQA cancer risk increment would also exceed the threshold at residential, occupational, and sensitive receptors. These exceedances are considered significant impacts under CEQA.

The maximum chronic hazard index CEQA increment is predicted to be less than the significance threshold of 1.0 at all receptors. The maximum acute hazard index CEQA increment is predicted to be greater than the significance threshold of 1.0 at several receptors, including the residential receptor.

NEPA Impact Determination

Table 3.2-105 shows that the maximum NEPA cancer risk increment associated with the unmitigated Alternative 5 is predicted to be 52 in a million (52×10^{-5}), at a residential receptor. This risk value exceeds the significance criterion of 10 in a million and would be considered a significant impact. The NEPA cancer risk increment would also exceed the threshold at occupational, sensitive, and recreational receptors. These exceedances are considered significant impacts under NEPA.

The maximum chronic hazard index NEPA increment is predicted to be less than the significance threshold of 1.0 at all receptors. The maximum acute hazard index NEPA increment is predicted to be greater than the significance threshold of 1.0 at several receptors, including the residential receptor.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9** through **MM AQ-24** described above for **Impact AQ-3**. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-106 presents a summary of the maximum health impacts that would occur with operation of this alternative with mitigation. The data show that the maximum CEQA cancer risk increment after mitigation is predicted to be 13 in a million (13×10^{-6}), at a recreational receptor. This risk value is above the significance threshold of 10 in a million. This exceedance is considered a significant impact under CEQA. The CEQA cancer risk increment would not be exceeded for any other receptor types.

Table 3.2-106. Maximum Health Impacts Associated with the Alternative 5 with Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 5	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	14×10^{-6} (14 in a million)	14×10^{-6} (14 in a million)	7.1×10^{-6} (7.1 in a million)	9.1×10^{-6} (9.1 in a million)	6.9×10^{-6} (6.9 in a million)	10×10^{-6} 10 in a million
	Occupational	9.5×10^{-6} (9.5 in a million)	11×10^{-6} (11 in a million)	8.8×10^{-6} (8.8 in a million)	7.5×10^{-6} (7.5 in a million)	8.6×10^{-6} (8.6 in a million)	
	Sensitive	5.9×10^{-6} (5.9 in a million)	2.3×10^{-6} (2.3 in a million)	3.7×10^{-6} (3.7 in a million)	2.1×10^{-6} (2.1 in a million)	3.8×10^{-6} (3.8 in a million)	
	Student	0.2×10^{-6} (0.2 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	
	Recreational	14×10^{-6} (14 in a million)	18×10^{-6} (18 in a million)	**13×10^{-6} (13 in a million)**	9.9×10^{-6} (9.9 in a million)	**13×10^{-6} (13 in a million)**	
Chronic Hazard Index	Residential	0.15	0.14	0.04	0.12	0.03	1.0
	Occupational	0.43	0.43	0.30	0.39	0.15	
	Sensitive	0.04	0.02	0.02	0.03	0.01	
	Student	0.04	0.02	0.02	0.03	0.01	
	Recreational	0.42	0.43	0.21	0.33	0.14	
Acute Hazard Index	Residential	1.13	0.13	**1.11**	0.24	**1.07**	1.0
	Occupational	1.98	0.22	**1.96**	0.38	**1.90**	
	Sensitive	0.93	0.04	0.90	0.14	0.87	
	Student	0.93	0.04	0.90	0.14	0.87	
	Recreational	1.31	0.22	**1.27**	0.34	**1.19**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and (2) one ship harbor transiting, turning, and docking. The scenario that yielded the highest result is reported for each impact type.

g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

The maximum chronic hazard index CEQA increment is predicted to be below the significance threshold of 1.0 at all receptors. The acute hazard index CEQA increment is predicted to be above the significance threshold of 1.0 and, therefore, is considered significant for several receptors, including the residential receptor.

The maximum NEPA cancer risk increment after mitigation is predicted to be 13 in a million (13×10^{-6}), at a recreational receptor. This risk value is above the significance threshold of 10 in a million. This exceedance is considered a significant impact under NEPA. The NEPA cancer risk increment would not be exceeded for any other receptor types.

The maximum chronic hazard index NEPA increment is predicted to be below the significance threshold of 1.0 at all receptors. The acute hazard index NEPA increment is predicted to be above the significance threshold of 1.0 and, therefore, is considered significant for several receptors, including the residential receptor.

Table 3.2-107 presents results of the 2009-2078 HRA. The results are provided for information purposes only and were not used to determine significance. However, the 2009-2078 HRA results indicate that the mitigation measures imposed by the Port starting in 2009 would further reduce the maximum cancer risk impacts relative to the 2004-2073 mitigated HRA levels. No cancer risk increment would exceed the significance threshold in the 2009-2078 HRA.

Table 3.2-107. Maximum Health Impacts Associated with the Alternative 5 with Mitigation, 2009-2078

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 5	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	4.9×10^{-6} (4.9 in a million)	14×10^{-6} (14 in a million)	3.6×10^{-6} (3.6 in a million)	3.6×10^{-6} (3.6 in a million)	3.9×10^{-6} (3.9 in a million)	10×10^{-6} 10 in a million
	Occupational	6.2×10^{-6} (6.2 in a million)	11×10^{-6} (11 in a million)	5.9×10^{-6} (5.9 in a million)	3.0×10^{-6} (3.0 in a million)	6.0×10^{-6} (6.0 in a million)	
	Sensitive	3.0×10^{-6} (3.0 in a million)	2.3×10^{-6} (2.3 in a million)	2.1×10^{-6} (2.1 in a million)	0.8×10^{-6} (0.8 in a million)	2.3×10^{-6} (2.3 in a million)	
	Student	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.1×10^{-6} (0.1 in a million)	0.02×10^{-6} (0.02 in a million)	0.1×10^{-6} (0.1 in a million)	
	Recreational	8.7×10^{-6} (8.7 in a million)	18×10^{-6} (18 in a million)	8.3×10^{-6} (8.3 in a million)	4.0×10^{-6} (4.0 in a million)	8.5×10^{-6} (8.5 in a million)	

Notes:

a) The 2009-2078 HRA is for informational purposes only. It shows the risks that would occur over a 70-year exposure period starting in 2009, the first year that the Port is able to implement a wide array of mitigation measures.

b) Exceedances of the significance criteria are in bold. The significance thresholds apply to the CEQA and NEPA increments only.

c) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

d) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

g) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and (2) one ship harbor transiting, turning, and docking. The scenario that yielded the highest result is reported for each impact type.

h) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

Alt 5 – Impact AQ-8: Alternative 5 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 5.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alternative 5 – Impact AQ-9: Alternative 5 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-108 summarizes the total GHG construction emissions associated with Alternative 5. Table 3.2-109 summarizes the annual GHG emissions that would occur in California from the operation of Alternative 5.

Table 3.2-108. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 5

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.18	0.01	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100	840	0.12	0.01	846
Crane Delivery and Installation	87	0.01	0.00	87
Berth 100 72-Acre Backlands Development	619	0.09	0.01	623
Construction of Bridge 1	33	0.00	0.00	34
Berth 121 Gate Modifications	29	0.01	0.00	29
Worker Trips	1,025	0.25	0.14	1,073
Total Emissions	**3,926**	**0.66**	**0.17**	**3,992**
CEQA Impact [e]	**3,926**	**0.66**	**0.17**	**3,992**
NEPA Impact [e]	**816**	**0.01**	**-0.12**	**781**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total project construction emissions minus NEPA baseline emissions. The NEPA baseline construction emissions are reported in Table 3.2-12.

Table 3.2-109. Annual Operational GHG Emissions – Alternative 5 without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	6,015	0.8	0.1	0	0	0	6,049
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	19,857	1.9	0.2	0	0	0	19,970
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**175,884**	**12.8**	**3.8**	**0.07**	**0.17**	**0.09**	**178,080**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**173,451**	**12.0**	**3.8**	**0.07**	**0.17**	**0.09**	**175,622**
NEPA Baseline	24,126	21	0	0	0	0	24,668
Project Minus NEPA Baseline	**151,758**	**-8.1**	**3.5**	**0.07**	**0.17**	**0.09**	**153,412**
Project Year 2015							
Ships – Transit	29,136	3.8	0.3	0	0	0	29,296
Ships – Hoteling	5,021	0.7	0.0	0	0	0	5,049
Tugboats	258	0.0	0.0	0	0	0	260
Trucks	161,597	8.1	4.0	0	0	0	163,014
Trains	10,596	1.5	0.1	0	0	0	10,660
Rail Yard Equipment	1,884	0.0	0.0	0	0	0	1,891
Terminal Equipment	24,467	0.3	0.3	0	0	0	24,563
Reefer Refrigerant Losses	0	0.0	0.0	0.09	0.21	0.10	919
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	2,102	0.0	0.0	0	0	0	2,105
Worker Trips	924	0.3	0.1	0	0	0	976
Total For Project Year 2015	**235,984**	**14.7**	**4.9**	**0.09**	**0.21**	**0.10**	**238,732**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**233,550**	**14.0**	**4.9**	**0.09**	**0.21**	**0.10**	**236,275**
NEPA Baseline	28,259	1	0	0	0	0	28,295
Project Minus NEPA Baseline	**207,724**	**13.8**	**4.9**	**0.09**	**0.21**	**0.10**	**210,438**
Project Year 2030							
Ships – Transit	41,366	5.5	0.4	0	0	0	41,594
Ships – Hoteling	5,504	0.7	0.0	0	0	0	5,535
Tugboats	344	0.0	0.0	0	0	0	346

Table 3.2-109. Annual Operational GHG Emissions – Alternative 5 without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Trucks	188,970	9.2	4.6	0	0	0	190,584
Trains	12,289	1.7	0.1	0	0	0	12,363
Rail Yard Equipment	2,262	0.0	0.0	0	0	0	2,271
Terminal Equipment	31,027	0.2	0.4	0	0	0	31,143
Reefer Refrigerant Losses	0	0.0	0.0	0.11	0.27	0.13	1,165
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	2,665	0.0	0.0	0	0	0	2,669
Worker Trips	1,077	0.3	0.2	0	0	0	1,137
Total Project Year 2030	**285,505**	**17.6**	**5.7**	**0.11**	**0.27**	**0.13**	**288,808**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**283,071**	**16.9**	**5.7**	**0.11**	**0.27**	**0.13**	**286,350**
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**257,214**	**16.7**	**5.6**	**0.11**	**0.27**	**0.13**	**260,480**
Project Year 2045							
Ships – Transit	41,366	5.5	0.4	0	0	0	41,594
Ships – Hoteling	5,504	0.7	0.0	0	0	0	5,535
Tugboats	344	0.0	0.0	0	0	0	346
Trucks	189,046	9.2	4.6	0	0	0	190,660
Trains	12,289	1.7	0.1	0	0	0	12,363
Rail Yard Equipment	2,262	0.0	0.0	0	0	0	2,271
Terminal Equipment	31,027	0.2	0.4	0	0	0	31,143
Reefer Refrigerant Losses	0	0.0	0.0	0.11	0.27	0.13	1,165
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	2,665	0.0	0.0	0	0	0	2,669
Worker Trips	1,100	0.3	0.2	0	0	0	1,162
Total Project Year 2045	**285,604**	**17.6**	**5.7**	**0.11**	**0.27**	**0.13**	**288,908**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**283,171**	**16.9**	**5.7**	**0.11**	**0.27**	**0.13**	**286,451**
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**257,313**	**16.7**	**5.7**	**0.11**	**0.27**	**0.13**	**260,582**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

CEQA Impact Determination

Table 3.2-108 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-109 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 5 would produce significant levels of GHG emissions under CEQA.

NEPA Impact Determination

Table 3.2-108 shows that total CO_2e emissions during project construction would exceed NEPA baseline construction emissions. In addition, the data in Table 3.2-109 show that in each future Project year, annual operational CO_2e emissions would increase from NEPA baseline levels.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 5 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-9, MM AQ-10, MM AQ-17, MM AQ-20, MM AQ-21**, and **MM AQ-25** through **MM AQ-30** for operations.

Table 3.2-110 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP), **MM AQ-10** (VSRP), **MM AQ-17** (yard equipment), and **MM AQ-20** (LNG trucks) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for **Impact AQ-9**.

Residual Impacts

Significant impacts would remain under CEQA.

Table 3.2-110. Annual Operational GHG Emissions – Alternative 5 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	18,123	2.4	0.2	0	0	0	18,223
Ships – Hoteling	3,441	0.5	0.0	0	0	0	3,460
Tugboats	172	0.0	0.0	0	0	0	173
Trucks	120,637	6.3	3.1	0	0	0	121,743
Trains	7,088	1.0	0.1	0	0	0	7,130
Rail Yard Equipment	1,530	0.1	0.0	0	0	0	1,538
Terminal Equipment	22,420	20.9	0.3	0	0	0	22,959
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.09	746
AMP Usage	1,318	0.0	0.0	0	0	0	1,320.4
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	757	0.2	0.1	0	0	0	799
Total For Project Year 2005	**177,191**	**31.5**	**3.9**	**0.07**	**0.17**	**0.09**	**179,800**

Table 3.2-110. Annual Operational GHG Emissions – Alternative 5 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**174,757**	**30.7**	**3.9**	**0.07**	**0.17**	**0.09**	**177,343**
NEPA Baseline	24,126	20.9	0.3	0	0	0	24,668
Project Minus NEPA Baseline	**153,065**	**10.5**	**3.6**	**0.07**	**0.17**	**0.09**	**155,133**
Project Year 2015							
Ships – Transit	10,981	1.5	0.1	0	0	0	11,047
Ships – Hoteling	1,368	0.2	0.0	0	0	0	1,376
Tugboats	258	0.0	0.0	0	0	0	260
Trucks	84,103	198.6	4.0	0	0	0	89,523
Trains	10,596	1.5	0.1	0	0	0	10,660
Rail Yard Equipment	1,884	0.0	0.0	0	0	0	1,891
Terminal Equipment	18,987	0.7	0.0	0	0	0	19,005
Reefer Refrigerant Losses	0	0.0	0.0	0.09	0.21	0.10	919
AMP Usage	1,852	0.0	0.0	0	0	0	1,855.2
On-Terminal Electricity Usage	2,102	0.0	0.0	0	0	0	2,105
Worker Trips	924	0.3	0.1	0	0	0	976
Total For Project Year 2015	**133,054**	**202.9**	**4.5**	**0.09**	**0.21**	**0.10**	**139,615**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**130,621**	**202.1**	**4.4**	**0.09**	**0.21**	**0.10**	**137,157**
NEPA Baseline	28,259	0.9	0.1	0	0	0	28,295
Project Minus NEPA Baseline	**104,795**	**202.0**	**4.4**	**0.09**	**0.21**	**0.10**	**111,320**
Project Year 2030							
Ships – Transit	15,435	2.1	0.2	0	0	0	15,526
Ships – Hoteling	1,465	0.2	0.0	0	0	0	1,474
Tugboats	344	0.0	0.0	0	0	0	346
Trucks	57,254	319.2	4.6	0	0	0	65,378
Trains	12,289	1.7	0.1	0	0	0	12,363
Rail Yard Equipment	2,262	0.0	0.0	0	0	0	2,271
Terminal Equipment	24,077	0.9	0.0	0	0	0	24,101
Reefer Refrigerant Losses	0	0.0	0.0	0.11	0.27	0.13	1,165
AMP Usage	2,049	0.0	0.0	0	0	0	2,051.9
On-Terminal Electricity Usage	2,665	0.0	0.0	0	0	0	2,669
Worker Trips	1,077	0.3	0.2	0	0	0	1,137
Total Project Year 2030	**118,917**	**324.5**	**5.1**	**0.11**	**0.27**	**0.13**	**128,483**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**116,484**	**323.8**	**5.1**	**0.11**	**0.27**	**0.13**	**126,025**

Table 3.2-110. Annual Operational GHG Emissions – Alternative 5 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**90,626**	**323.6**	**5.1**	**0.11**	**0.27**	**0.13**	**100,155**
Project Year 2045							
Ships – Transit	15,435	2.1	0.2	0	0	0	15,526
Ships – Hoteling	1,465	0.2	0.0	0	0	0	1,474
Tugboats	344	0.0	0.0	0	0	0	346
Trucks	57,254	319.2	4.6	0	0	0	65,378
Trains	12,289	1.7	0.1	0	0	0	12,363
Rail Yard Equipment	2,262	0.0	0.0	0	0	0	2,271
Terminal Equipment	24,077	0.9	0.0	0	0	0	24,100
Reefer Refrigerant Losses	0	0.0	0.0	0.11	0.27	0.13	1,165
AMP Usage	2,049	0.0	0.0	0	0	0	2,051.9
On-Terminal Electricity Usage	2,665	0.0	0.0	0	0	0	2,669
Worker Trips	1,100	0.3	0.2	0	0	0	1,162
Total Project Year 2045	**118,940**	**324.5**	**5.1**	**0.11**	**0.27**	**0.13**	**128,507**
CEQA Baseline	2,433	0.8	0.0	0.0	0.0	0.0	2,457
Project Minus CEQA Baseline	**116,507**	**323.7**	**5.1**	**0.11**	**0.27**	**0.13**	**126,049**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**90,650**	**323.6**	**5.1**	**0.11**	**0.27**	**0.13**	**100,180**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

3.2.4.4.1.6 Alternative 6 – Omni Cargo Terminal

Alternative 6 would convert the existing site into an operating omni cargo-handling terminal similar to the Pasha Stevedoring & Terminals L. P. (Pasha) currently operating at Berths 174-181. The primary objective of the Alternative 6 would be to provide increased and diversified cargo-handling capabilities by expanding and improving existing terminal facilities. The omni terminal would handle containers, roll-on/roll-off and break-bulk commodities.

Alternative 6 would develop 2,500 feet of wharves (including the Berth 100 wharf completed as part of Phase I), five new A-frame cranes (one would be added to the existing four A-frame cranes installed as part of Phase I), and backlands occupying 142 acres (the same as under the proposed Project). Annual throughput volumes at the proposed omni terminal would vary by commodity. Section 2.5.1.6 presents a comprehensive description of Alternative 6.

Alt 6 – Impact AQ-1: Alternative 6 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Construction activities would include a new 250,000- to 350,000-square-foot transit storage shed, new entrance and exit gate facilities, heavy lift pad, utility relocations, possible realignment of existing railroad tracks, and demolition and/or reconstruction of existing backlands facilities to meet omni terminal needs. All of the activities for the proposed Project in Tables 3.2-18 and 3.2-20 would approximate maximum daily construction emissions for this alternative. However, depending on the overlap of construction activities, emissions for Alternative 6 could be slightly greater than emissions from the proposed Project because of the additional construction activities described. As a result, unmitigated emissions for this alternative would exceed SCAQMD daily thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under CEQA, and would exceed the thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ under NEPA.

CEQA Impact Determination

Alternative 6 would exceed the daily construction emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phases II and III construction. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation, emissions of VOC would be reduced to a less than significant level. However, despite implementation of mitigation and compliance with SCAQMD Rule 403, emissions from the construction of Alternative 6 would exceed the SCAQMD daily thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant.

NEPA Impact Determination

Alternative 6 would exceed the daily construction emission thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ during Phase II and III construction. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of mitigation and compliance with SCAQMD Rule 403, emissions from the construction of Alternative 6 would still exceed SCAQMD daily thresholds for NO_X, SO_X, and $PM_{2.5}$.

Residual Impacts

The residual air quality impacts would be temporary but significant.

Alt 6 – Impact AQ-2: Alternative 6 construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Depending on the overlap of construction activities, construction emissions for Alternative 6 are expected to be comparable to or even slightly greater than emissions from the proposed Project.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

The dispersion modeling analysis for unmitigated Phase II and Phase III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ standards; therefore, the slight changes of the Phase II activity of Alternative 6 are unlikely to result in an exceedance of these standards.

Maximum offsite ambient pollutant concentrations of NO_X associated with Alternative 6 Phases II and III activities would be comparable to or slightly higher than the proposed Project. This would represent a significant impact under CEQA.

NEPA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

The dispersion modeling analysis for unmitigated Phase II and Phase III construction activities for the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, and $PM_{2.5}$ standards; therefore, the slight changes of the Phase II activity of Alternative 6 are unlikely to result in an exceedance of these standards.

Maximum offsite ambient pollutant concentrations of NO_X associated with Alternative 6 Phase II and III activities would be comparable to or slightly higher than the proposed Project. This would represent a significant impact under NEPA.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, offsite ambient concentrations from Phase I construction activities remained significant for NO_X and PM_{10}. However, offsite ambient concentrations from Phases II and III construction activities would be below the significance thresholds for all pollutants.

Residual Impacts

The residual air quality impacts would be temporary but significant for NO_X and PM_{10} in Phase I only.

Alt 6 – Impact AQ-3: Alternative 6 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-16.

Table 3.2-111 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for 4 Project study years: 2005, 2015, 2030, and 2045. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with this alternative assume the following activity levels:

- Annual cargo throughput volumes for Berths 97-109 are estimated to be 145,000 container TEUs, 9,120 auto TEUs, and 913,166 break-bulk tons in 2005; 392,867 container TEUs, 17,987 auto TEUs, and 2,743,777 break-bulk tons in 2015; and 506,467 container TEUs, 17,987 auto TEUs, and 5,159,570 break bulk tons in 2030 and 2045.
- Annual ship calls to Berths 97-109 are estimated to be 78 visits in 2005, 234 visits in 2015, and 364 visits in 2030 and 2045.
- Without mitigation, the VSRP compliance rate was assumed to be 68 percent in 2005, 2015, 2030, and 2045. This represents the actual China Shipping compliance rate in 2005 (pers. comm., Maggay, 2005).
- There would be no TEUs moving through on-dock rail (Berth 121-131 ICTF) for this alternative. The fraction of all container TEUs moving through off-dock rail yards is estimated to be 35.6 percent in 2005, 35.6 percent in 2015, and 33.6 percent in 2030 and 2045. The fraction of all container TEUs hauled by truck to nonrail-yard destinations is estimated to be 64.4 percent in 2005, 64.4 percent in 2015, and 66.4 percent in 2030 and 2045. All noncontainer cargo is assumed to be hauled exclusively by truck.
- This alternative would generate 1,057; 2,918; 3,982; and 3,982 daily truck trips in 2005, 2015, 2030, and 2045, respectively.
- This alternative would generate 148; 404; 490; and 490 annual one-way train trips in 2005, 2015, 2030, and 2045, respectively.

Table 3.2-111. Average Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	24	51	592	346	52	41
Ships – Hoteling	9	23	303	260	27	22
Tugboats	1	5	33	2	1	1
Trucks	162	780	1,457	10	111	75
Trains	7	19	132	8	5	4
Rail Yard Equipment	4	14	39	0	2	2
Terminal Equipment	201	800	1,787	15	107	99
Worker Trips	2	25	3	0	3	1
Total – Project Year 2005	**410**	**1,718**	**4,346**	**642**	**307**	**244**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	350	1,492	3,780	632	276	215
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	227	-983	3,272	638	288	226
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	71	152	1,760	1,030	153	123
Ships – Hoteling	18	49	642	551	57	46
Tugboats	2	15	83	0	3	3
Trucks	244	1,046	2,081	4	187	91
Trains	15	50	261	0	8	7
Rail Yard Equipment	1	39	33	0	1	1
Terminal Equipment	170	2,525	4,384	5	221	203
Worker Trips	2	30	4	0	8	2
Total – Project Year 2015	**523**	**3,908**	**9,248**	**1,590**	**639**	**475**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	463	3,682	8,682	1,579	607	446
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 3.2-111. Average Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	515	3,056	9,176	1,589	636	473
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	92	199	2,344	1,377	203	163
Ships – Hoteling	25	68	890	761	79	63
Tugboats	3	25	98	0	4	4
Trucks	161	685	1,418	6	203	59
Trains	14	61	260	0	7	6
Rail Yard Equipment	1	43	6	0	0	0
Terminal Equipment	93	3,516	1,874	8	14	13
Worker Trips	2	17	2	0	9	2
Total – Project Year 2030	**392**	**4,615**	**6,893**	**2,154**	**521**	**310**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	332	4,390	6,327	2,143	489	281
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	384	3,726	6,817	2,154	518	307
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	92	199	2,344	1,377	203	163
Ships – Hoteling	25	68	890	761	79	63
Tugboats	3	25	98	0	4	4
Trucks	151	640	1,338	6	200	56
Trains	13	61	240	0	6	5
Rail Yard Equipment	1	43	6	0	0	0
Terminal Equipment	93	3,516	1,874	8	14	13
Worker Trips	1	15	1	0	9	2
Total – Project Year 2045	**379**	**4,568**	**6,792**	**2,154**	**517**	**306**

Table 3.2-111. Average Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	319	4,342	6,226	2,143	485	277
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	371	3,699	6,717	2,154	514	304
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-112 shows the peak daily operational emissions and impacts associated with Alternative 6. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

- Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2005, one 5,000- to 6,000-TEU-capacity vessel arrives and hotels; and (b) in 2010 and beyond, one 3,000- to 5,000-TEU-capacity vessel arrives and hotels, and another 3,000- to 5,000-TEU-capacity vessel hotels and departs. The time each vessel is assumed to hotel equals 24 hours minus the ship transit time between the South Coast Air Basin overwater boundary and the berth.
- Trains and rail yard equipment: In all analysis years, the peak-day scenario for off-dock rail yards assumes that the equivalent of one train carrying only Project-generated cargo arrives and is completely disassembled, and a second train carrying only Project-generated cargo is fully assembled and departs. As part of this alternative, it is assumed that the Omni terminal has no access to on-dock rail.
- Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 33 percent more truck trips on the peak day compared to an average day for 2005, 2010, and 2015, and about 22 percent more truck trips than an average day for 2030 and 2045. The

peaking factor is lower in 2030 and 2045 because port activities are assumed to be more evenly spread out during the year because of the higher throughput (that is, all months are assumed to be equally busy).

- Terminal equipment: The peak daily emissions assume terminal equipment activity equivalent to 2.7 times the average level of activity. The peaking factor of 2.7 represents the average peaking factor from all proposed Project analysis years. This factor was assumed to be representative of peak day Alternative 6 conditions.

Table 3.2-112. Peak Daily Operational Emissions Without Mitigation – Alternative 6

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	217	1,042	1,947	14	148	100
Trains	45	123	856	55	30	27
Rail Yard Equipment	20	70	191	2	9	9
Terminal Equipment	541	2,151	4,807	40	289	265
Worker Trips	3	31	4	0	4	1
Total – Project Year 2005	**995**	**3,800**	**12,387**	**5,588**	**1,061**	**868**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	834	3,194	10,864	5,560	977	791
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	503	-3,468	9,497	5,577	1,008	818
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	189	409	4,895	4,800	567	454
Ships – Hoteling	51	138	1,821	3,646	293	235
Tugboats	3	21	112	0	4	4
Trucks	325	1,398	2,781	5	250	122
Trains	35	121	624	0	19	17
Rail Yard Equipment	2	71	61	0	2	2
Terminal Equipment	457	6,794	11,795	13	594	546
Worker Trips	3	36	5	0	10	2
Total – Project Year 2015	**1,065**	**8,989**	**22,092**	**8,466**	**1,740**	**1,382**

Table 3.2-112. Peak Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	904	8,382	20,569	8,438	1,655	1,304
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	20	2,291	193	1	7	7
Project minus NEPA Baseline	1,045	6,697	21,899	8,465	1,733	1,375
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	189	409	4,895	4,800	567	454
Ships – Hoteling	51	138	1,821	3,646	293	235
Tugboats	3	21	84	0	4	3
Trucks	198	838	1,735	8	249	72
Trains	28	121	510	0	14	13
Rail Yard Equipment	1	65	9	0	0	0
Terminal Equipment	251	9,460	5,042	23	38	35
Worker Trips	2	21	2	0	12	2
Total – Project Year 2030	**723**	**11,072**	**14,098**	**8,478**	**1,177**	**814**
<u>CEQA Impacts</u>						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	561	10,466	12,575	8,449	1,092	736
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
<u>NEPA Impacts</u>						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	700	8,679	13,892	8,477	1,169	806
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	189	409	4,895	4,800	567	454
Ships – Hoteling	51	138	1,821	3,646	293	235
Tugboats	3	21	84	0	4	3
Trucks	184	783	1,637	8	245	68
Trains	25	121	472	0	12	11
Rail Yard Equipment	1	65	9	0	0	0

Table 3.2-112. Peak Daily Operational Emissions Without Mitigation – Alternative 6

	Peak Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Terminal Equipment	251	9,460	5,042	23	38	35
Worker Trips	2	18	2	0	12	2
Total – Project Year 2045	**706**	**11,014**	**13,961**	**8,478**	**1,171**	**808**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	545	10,408	12,438	8,449	1,086	730
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	685	8,678	13,757	8,477	1,163	801
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-113 shows the combined construction and operational emissions and impacts in 2010 due to the overlap of construction and operational activities.

Table 3.2-113. Peak Daily 2010 Construction and Operational Emissions – Alternative 6 Without Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Construct 17 of 45-acre Backland	17	58	137	0.15	52	15
Construct 10 of 45-acre Backlands	17	58	137	0.15	33	11
South Extension of Berth 100	21	63	442	0.27	19	18
Worker Trips	2	27	4	0	5	1
Maximum Daily Construction Emissions	**57**	**206**	**720**	**363**	**109**	**56**
Operation						
Ships – Transit and Anchoring	189	409	4,895	4,800	567	454
Ships – Hoteling	51	138	1,821	3,646	293	235
Tugboats	3	21	126	0	4	4
Trucks	358	1,625	3,143	3	233	143
Trains	38	121	670	14	22	20
Rail Yard Equipment	3	67	58	0	2	2
Terminal Equipment	414	3,289	5,757	7	319	293
Worker Trips	3	37	5	0	7	1
Maximum Daily Emissions – Operation	**1,058**	**5,707**	**16,474**	**8,471**	**1,448**	**1,152**
Total – Construction & Operation – Project Year 2010	**1,115**	**5,913**	**17,194**	**8,834**	**1,557**	**1,208**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**954**	**5,306**	**15,671**	**8,806**	**1,472**	**1,130**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**221**	**-10,274**	**13,662**	**8,833**	**1,462**	**1,142**
Thresholds	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

[a] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[b] The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

[c] NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

[d] The SCAQMD operational thresholds are used in the significance determinations.

CEQA Impact Determination

From a CEQA perspective, Alternative 6 peak daily emissions are expected to exceed CEQA baseline emissions for all criteria pollutants in all study years. The unmitigated air quality impacts associated with Alternative 6 would be significant for all criteria pollutants in 2005, 2015, 2030, and 2045. In addition, in 2010 the combined total of construction and operational impacts is expected to be significant for all criteria pollutants.

NEPA Impact Determination

From a NEPA perspective, Alternative 6 peak daily emissions are expected to exceed NEPA baseline emissions for all criteria pollutants in all study years except CO in 2005. The unmitigated air quality impacts associated with Alternative 6 are expected to be significant for all criteria pollutants in all study years except CO in 2005. In addition, in 2010 the combined total of construction and operational impacts is expected to be significant for all criteria pollutants except CO.

Mitigation Measures

With several exceptions described below, **MM AQ-9** through **MM AQ-24** would apply to Alternative 6. The exceptions are as follows.

AMP implementation for Alternative 6 would differ from the other alternatives because Alternative 6 would have a different terminal operator, and as such the Settlement Agreement measures would not apply.

MM AQ-9: ***AMP (Alternative 6 only)*** **– For Alternative 6, the following AMP requirements shall apply to general cargo vessels (break-bulk cargo) and container vessels:**

- **10 percent of ship calls starting January 1, 2010**
- **40 percent of ship calls starting January 1, 2015**
- **80 percent of ship calls starting January 1, 2020**

Mitigation measures for cargo-handling equipment for Alternative 6 would also be different than for other alternatives because the fleet composition of terminal equipment at an omni terminal would differ from that of container terminals.

MM AQ-15: ***Yard Tractors on Terminal (Alternative 6 only)*** **– For Alternative 6, beginning January 1, 2015, all yard tractors operated at the Berth 97-109 terminal shall be the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM.**

MM AQ-17: ***Yard Equipment on Terminal (Alternative 6 only)*** **– For Alternative 6, Beginning January 1, 2009, all diesel-powered terminal equipment at the Berth 97-109 terminal shall implement the following measures:**

- **Beginning in January 1, 2009, all terminal equipment purchases shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available**

that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC.

- **By the end of 2012, all terminal equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards.**
- **By the end of 2014, all terminal equipment shall meet USEPA Tier 4 non-road engine standards.**

Mitigation measures pertaining to the Berth 121-131 rail yard would not apply to Alternative 6 because this rail yard would not be used as part of this alternative.

MM AQ-16: ***Yard Equipment at Berth 121-131 Rail Yard (Alternative 6 only) –*** **This measure does not apply to Alternative 6.**

MM AQ-18: ***Yard Locomotives at Berth 121-131 Rail Yard (Alternative 6 only) –*** **This measure does not apply to Alternative 6.**

Residual Impacts

Tables 3.2-114 and 3.2-115 show average daily and peak daily criteria pollutant emissions for each study year and impacts associated with Alternative 6, after mitigation. In addition, Table 3.2-116 shows the combined construction and operational peak daily criteria emissions for 2010 and associated impacts.

From a CEQA perspective, Alternative 6 emissions after mitigation are expected to exceed baseline emissions for all criteria pollutants in 2005, 2015, 2030, and 2045. The air quality impacts associated with Alternative 6 after mitigation are expected to remain significant for all criteria pollutants for all study years. In addition, in 2010 the combined total of construction and operational impacts is expected to be significant for all criteria pollutants.

From a NEPA perspective, Alternative 6 emissions after mitigation are expected to be greater than NEPA baseline emissions for all pollutants in all the study years, with the exception of CO in 2005. The air quality impacts associated with Alternative 6 after mitigation are expected to be significant for all pollutants in all study years except CO in 2005. In addition, in 2010, the combined total of construction and operational impacts is expected to be significant for all criteria pollutants except VOC and CO.

Table 3.2-114. Average Daily Operational Emissions With Mitigation – Alternative 6

	Average Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	24	51	592	346	52	41
Ships – Hoteling	9	23	303	260	27	22
Tugboats	1	5	33	2	1	1
Trucks	162	780	1,457	10	111	75
Trains	7	19	132	8	5	4
Rail Yard Equipment	4	14	39	0	2	2
Terminal Equipment	201	800	1,787	15	107	99

Table 3.2-114. Average Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Average Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Worker Trips	2	25	3	0	3	1
Total – Project Year 2005	**410**	**1,718**	**4,346**	**642**	**307**	**244**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	350	1,492	3,780	632	276	215
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	183	2,701	1,074	4	20	19
Project minus NEPA Baseline	227	-983	3,272	638	288	226
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	56	116	843	52	29	23
Ships – Hoteling	12	32	387	38	11	9
Tugboats	2	15	83	0	3	3
Trucks	85	289	721	1	126	35
Trains	15	50	261	0	8	7
Rail Yard Equipment	1	39	33	0	1	1
Terminal Equipment	48	1,926	979	4	7	7
Worker Trips	2	30	4	0	8	2
Total – Project Year 2015	**220**	**2,498**	**3,312**	**96**	**192**	**86**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	160	2,272	2,746	85	161	57
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	7	852	72	0	3	3
Project minus NEPA Baseline	213	1,646	3,240	95	190	84
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	73	155	1,161	73	39	31
Ships – Hoteling	7	21	221	33	9	7
Tugboats	3	25	98	0	4	4
Trucks	191	568	1,660	0	215	72
Trains	14	61	260	0	7	6
Rail Yard Equipment	1	43	6	0	0	0
Terminal Equipment	92	3,436	1,829	7	14	13

Table 3.2-114. Average Daily Operational Emissions With Mitigation – Alternative 6

	Average Daily Emissions (lb/day)					
Emission Source	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Worker Trips	2	17	2	0	9	2
Total – Project Year 2030	**382**	**4,326**	**5,236**	**113**	**298**	**136**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	323	4,100	4,670	103	266	107
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	889	76	0	3	3
Project minus NEPA Baseline	374	3,436	5,160	113	295	134
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	73	155	1,161	73	39	31
Ships – Hoteling	7	21	221	33	9	7
Tugboats	3	25	98	0	4	4
Trucks	191	568	1,660	0	215	72
Trains	13	61	240	0	6	5
Rail Yard Equipment	1	43	6	0	0	0
Terminal Equipment	92	3,421	1,828	7	14	13
Worker Trips	1	15	1	0	9	2
Total – Project Year 2045	**380**	**4,308**	**5,216**	**113**	**297**	**135**
CEQA Impacts						
CEQA Baseline Emissions	60	225	566	10	31	29
Project minus CEQA Baseline	321	4,082	4,650	103	265	106
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	8	868	75	0	3	3
Project minus NEPA Baseline	372	3,439	5,140	113	294	133
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation.

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-115. Peak Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2005						
Ships – Transit and Anchoring	133	278	3,266	3,179	385	308
Ships – Hoteling	35	94	1,249	2,294	194	156
Tugboats	2	10	68	5	3	3
Trucks	217	1,042	1,947	14	148	100
Trains	45	123	856	55	30	27
Rail Yard Equipment	20	70	191	2	9	9
Terminal Equipment	541	2,151	4,807	40	289	265
Worker Trips	3	31	4	0	4	1
Total – Project Year 2005	**995**	**3,800**	**12,387**	**5,588**	**1,061**	**868**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	834	3,194	10,864	5,560	977	791
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	492	7,268	2,890	11	53	50
Project minus NEPA Baseline	503	-3,468	9,497	5,577	1,008	818
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2015						
Ships – Transit and Anchoring	116	237	1,561	93	55	44
Ships – Hoteling	48	128	1,594	146	42	34
Tugboats	3	21	112	0	4	4
Trucks	113	386	963	2	168	47
Trains	35	121	624	0	19	17
Rail Yard Equipment	2	71	61	0	2	2
Terminal Equipment	129	5,182	2,634	11	19	18
Worker Trips	3	36	5	0	10	2
Total – Project Year 2015	**449**	**6,182**	**7,554**	**252**	**319**	**168**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	288	5,575	6,031	224	235	90
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	20	2,291	193	1	7	7

Table 3.2-115. Peak Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project minus NEPA Baseline	429	3,891	7,361	251	313	161
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2030						
Ships – Transit and Anchoring	116	237	1,561	93	55	44
Ships – Hoteling	48	128	1,594	146	42	34
Tugboats	3	21	84	0	4	3
Trucks	234	694	2,031	0	263	88
Trains	28	121	510	0	14	13
Rail Yard Equipment	1	65	9	0	0	0
Terminal Equipment	247	9,245	4,920	19	37	35
Worker Trips	2	21	2	0	12	2
Total – Project Year 2030	**678**	**10,532**	**10,711**	**259**	**427**	**220**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	517	9,925	9,188	230	342	142
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,393	205	1	8	8
Project minus NEPA Baseline	656	8,139	10,505	258	419	212
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2045						
Ships – Transit and Anchoring	116	237	1,561	93	55	44
Ships – Hoteling	48	128	1,594	146	42	34
Tugboats	3	21	84	0	4	3
Trucks	234	694	2,031	0	263	88
Trains	25	121	472	0	12	11
Rail Yard Equipment	1	65	9	0	0	0
Terminal Equipment	246	9,205	4,919	19	37	34
Worker Trips	2	18	2	0	12	2
Total – Project Year 2045	**674**	**10,488**	**10,670**	**259**	**425**	**218**
CEQA Impacts						
CEQA Baseline Emissions	161	607	1,523	28	85	78
Project minus CEQA Baseline	513	9,881	9,147	230	340	140
Thresholds	55	550	55	150	150	55

Table 3.2-115. Peak Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Impacts						
NEPA Baseline Emissions	22	2,336	203	1	7	7
Project minus NEPA Baseline	653	8,152	10,467	258	417	210
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) For the NEPA significance determination in this table, NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

e) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

f) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-116. Peak Daily 2010 Construction and Operational Emissions – Alternative 6 With Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction						
Construct 17 of 45-acre Backland	11	50	111	0	21	6
Construct 10 of 45-acre Backlands (Behind Rear Berth 102)	11	50	111	0	13	5
South Extension of Berth 100	17	63	303	0	16	15
Worker Trips	2	27	4	0.02	5	1
Maximum Daily Construction Emissions	**42**	**189**	**539**	**302**	**61**	**35**
Operation						
Ships – Transit and Anchoring	116	237	2,275	2,197	290	232
Ships – Hoteling	48	128	1,690	3,384	272	218
Tugboats	3	21	126	0	4	4
Trucks	202	906	2,053	3	163	77
Trains	38	121	670	14	22	20
Rail Yard Equipment	3	67	58	0	2	2
Terminal Equipment	404	3,249	5,683	7	309	284
Worker Trips	3	37	5	0	7	1
Maximum Daily Emissions – Operation	**816**	**4,766**	**12,559**	**5,607**	**1,068**	**838**

Table 3.2-116. Peak Daily 2010 Construction and Operational Emissions – Alternative 6 With Mitigation

Project Year 2010	Peak Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Total – Construction & Operation – Project Year 2010	**858**	**4,955**	**13,098**	**5,909**	**1,129**	**873**
CEQA Baseline Emissions [a]	161	607	1,523	28	85	78
CEQA Impact [b]	**697**	**4,348**	**11,575**	**5,881**	**1,044**	**795**
NEPA Baseline Emissions [c]	894	16,187	3,532	1	95	66
NEPA Impact [b]	**-36**	**-11,232**	**9,566**	**5,908**	**1,034**	**807**
Thresholds	55	550	55	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
NEPA Significant?	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Note:

[a] CEQA baseline emissions include peak daily CEQA operational emissions from April 2000 – March 2001, as reported in Table 3.2-5. There are no construction emissions associated with the CEQA baseline.

[b] The CEQA Impact equals total Project construction plus operational emissions minus CEQA baseline emissions. The NEPA impact equals total Project construction plus operational emissions minus NEPA baseline emissions.

[c] NEPA baseline emissions include peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9, plus peak daily NEPA operational emissions in 2010, as reported in Table 3.2-11.

[d] The SCAQMD operational thresholds are used in the significance determinations.

Alt 6 – Impact AQ-4: Alternative 6 operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Dispersion modeling of onsite and offsite Project operational emissions was performed to assess the impact of Alternative 6 on local ambient air concentrations. Construction emissions were added to the operational emissions in the model during the periods where construction emissions overlap with operations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-117 presents the maximum offsite ground-level concentrations of NO_2 and CO for Alternative 6 without mitigation. Table 3.2-118 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

Table 3.2-117. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 6 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 6 (µg/m³)	Background Concentration (µg/m³)	Total Ground Level Concentration (µg/m³)	SCAQMD Threshold (µg/m³)
NO_2 [c]	1-hour	3,500	263	**3,763**	338
	Annual	132.5	52.7	**185.2**	56.4
CO	1-hour	3,689	4,809	8,498	23,000
	8-hour	910	4,008	4,918	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-118. Maximum Offsite PM Concentrations Associated with Operation of Alternative 6 without Mitigation

	Maximum Modeled Concentration of Alt. 6 (µg/m³)	Maximum Modeled Concentration of CEQA Baseline (µg/m³)	Maximum Modeled Concentration of NEPA Baseline (µg/m³)	Ground-Level Concentration CEQA Increment [c] (µg/m³)	Ground-Level Concentration NEPA Increment [c] (µg/m³)	SCAQMD Threshold (µg/m³)
PM_{10} 24-hour	39.2	10.2	5.7	**30.3**	**33.5**	2.5
$PM_{2.5}$ 24-hour	35.9	9.4	3.8	**27.7**	**32.1**	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 6 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents Project minus CEQA baseline. The NEPA Increment represents Project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

CEQA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2 (1-hour and annual), PM_{10} (24-hour) and $PM_{2.5}$ (24-hour). Therefore, significant impacts under CEQA would occur.

NEPA Impact Determination

Operation of this alternative would produce significant offsite ambient concentrations for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Project operations under Alternative 6 would be the same as measures applied for **Impact AQ-3** for Alternative 6. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5.

Table 3.2-119 presents the maximum offsite ground-level concentrations of NO_2 and CO for Alternative 6 after mitigation. Table 3.2-120 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments after mitigation.

Table 3.2-119. Maximum Offsite NO_2 and CO Concentrations Associated with Operation of Alternative 6 With Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 6 (μg/m^3)	Background Concentration (μg/m^3)	Total Ground Level Concentration (μg/m^3)	SCAQMD Threshold (μg/m^3)
NO_2 [c]	1-hour	1,965	263	**2,228**	338
	Annual	66.7	52.7	**119.4**	56.4
CO	1-hour	3,590	4,809	8,399	23,000
	8-hour	885	4,008	4,893	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2004, 2005, and 2006 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NO_X to NO_2 (SCAQMD, 2003c). This conversion rate assumes that the maximum receptor locations are located within 2,000 meters of the emission sources that contribute the most to the modeled concentrations.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Table 3.2-120. Maximum Offsite PM Concentrations Associated with Operation of Alternative 6 With Mitigation

	Maximum Modeled Concentration of Alt. 6 (µg/m³)	Maximum Modeled Concentration of CEQA Baseline (µg/m³)	Maximum Modeled Concentration of NEPA baseline (µg/m³)	Ground-Level Concentration CEQA Increment [c] (µg/m³)	Ground-Level Concentration NEPA Increment [c] (µg/m³)	SCAQMD Threshold (µg/m³)
PM_{10} 24-hour	23.9	10.2	5.7	**16.8**	**18.2**	2.5
$PM_{2.5}$ 24-hour	20.1	9.4	3.8	**14.0**	**16.3**	2.5

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 6 concentration. The example provided in the discussion of **Impact AQ-7** for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents Project minus CEQA baseline. The NEPA Increment represents Project minus NEPA baseline.

d) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Residual Impacts

From a CEQA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

From a NEPA perspective, maximum offsite concentrations after mitigation are expected to remain significant for NO_2 (1-hour and annual), PM_{10} (24-hour), and $PM_{2.5}$ (24-hour).

Alt 6 – Impact AQ-5: Alternative 6 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate less truck traffic than the proposed Project for all analysis years. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any proposed Project study year.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

NEPA Impact Determination

Significant impacts under NEPA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 6 – Impact AQ-6: Alternative 6 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

NEPA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under NEPA, therefore, are not anticipated.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA and NEPA.

Alt 6 – Impact AQ-7: Alternative 6 would expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 6 operations would be DPM emissions from ships, tugboats, terminal equipment, and trucks. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2004 through 2073. An HRA was performed over this 70-year exposure period.

Table 3.2-121 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for this alternative, CEQA baseline, NEPA baseline, CEQA increment (alternative minus CEQA baseline), and NEPA increment (alternative minus NEPA baseline).

Table 3.2-121. Maximum Health Impacts Associated with Alternative 6 Without Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 6	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	155×10^{-6} (155 in a million)	14×10^{-6} (14 in a million)	**141×10^{-6}** **(141 in a million)**	9.1×10^{-6} (9.1 in a million)	**146×10^{-6}** **(146 in a million)**	10×10^{-6} 10 in a million
	Occupational	128×10^{-6} (128 in a million)	11×10^{-6} (11 in a million)	**118×10^{-6}** **(118 in a million)**	7.5×10^{-6} (7.5 in a million)	**120×10^{-6}** **(120 in a million)**	
	Sensitive	58×10^{-6} (58 in a million)	2.3×10^{-6} (2.3 in a million)	**56×10^{-6}** **(56 in a million)**	2.1×10^{-6} (2.1 in a million)	**56×10^{-6}** **(56 in a million)**	
	Student	1.6×10^{-6} (1.6 in a million)	0.1×10^{-6} (0.1 in a million)	1.6×10^{-6} (1.6 in a million)	0.1×10^{-6} (0.1 in a million)	1.6×10^{-6} (1.6 in a million)	
	Recreational	166×10^{-6} (166 in a million)	18×10^{-6} (18 in a million)	**153×10^{-6}** **(153 in a million)**	9.9×10^{-6} (9.9 in a million)	**157×10^{-6}** **(157 in a million)**	
Chronic Hazard Index	Residential	0.52	0.14	0.38	0.12	0.40	1.0
	Occupational	1.78	0.43	**1.41**	0.39	**1.39**	
	Sensitive	0.14	0.02	0.11	0.03	0.11	
	Student	0.14	0.02	0.11	0.03	0.11	
	Recreational	1.50	0.43	**1.19**	0.33	**1.19**	
Acute Hazard Index	Residential	1.10	0.13	**1.08**	0.24	**1.04**	1.0
	Occupational	1.71	0.22	**1.69**	0.38	**1.62**	
	Sensitive	0.94	0.04	0.90	0.14	0.88	
	Student	0.94	0.04	0.90	0.14	0.88	
	Recreational	1.36	0.22	**1.32**	0.34	**1.24**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents the Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type. Ships were conservatively assumed to use fuel with a 4.5 percent sulfur content for the 1-hour acute hazard index calculation.

g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

CEQA Impact Determination

Table 3.2-121 shows that the maximum CEQA cancer risk increment associated with the unmitigated Alternative 6 is predicted to be 153 in a million (153×10^{-6}), at a recreational receptor. This risk value exceeds the significance criterion of 10 in a million. The CEQA cancer risk increment would also exceed the threshold at residential, occupational, and sensitive receptors. These exceedances are considered significant impacts under CEQA.

The maximum chronic hazard index CEQA increment is predicted to be greater than the significance threshold of 1.0 at occupational and recreational receptors. The maximum acute hazard index CEQA increment is predicted to be greater than the significance threshold of 1.0 at residential, occupational, and recreational receptors. These exceedances are considered significant impacts under CEQA.

NEPA Impact Determination

Table 3.2-121 shows that the maximum NEPA cancer risk increment associated with the unmitigated Alternative 6 is predicted to be 157 in a million (157×10^{-6}), at a recreational receptor. This risk value exceeds the significance criterion of 10 in a million. The NEPA cancer risk increment also would exceed the threshold at residential, occupational, and sensitive receptors. These exceedances are considered significant impacts under NEPA.

The maximum chronic hazard index NEPA increment is predicted to be greater than the significance threshold of 1.0 at occupational and recreational receptors. The maximum acute hazard index NEPA increment is predicted to be greater than the significance threshold of 1.0 at residential, occupational, and recreational receptors. These exceedances are considered significant impacts under NEPA.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures described in AQ-3 above for Alternative 6. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-122 presents a summary of the maximum health impacts that would occur with operation of this alternative with mitigation. The data show that the maximum CEQA cancer risk increment after mitigation is predicted to be 99 in a million (99×10^{-6}), at a recreational receptor. This risk value is above the significance threshold of 10 in a million. The CEQA cancer risk increment would also exceed the threshold at residential, occupational, and sensitive receptors. These exceedances are considered significant impacts under CEQA.

The maximum chronic hazard index CEQA increment is predicted to be below the significance threshold of 1.0 at all receptors. The acute hazard index CEQA increment is predicted to be above the significance threshold of 1.0 and is therefore considered significant for several receptors, including the residential receptor.

The data show that the maximum NEPA cancer risk increment after mitigation is predicted to be 102 in a million (102×10^{-6}), at a recreational receptor. This risk value is above the significance threshold of 10 in a million. The NEPA cancer risk increment would also exceed the threshold at residential, occupational, and sensitive receptors. These exceedances are considered significant impacts under NEPA.

Table 3.2-122. Maximum Health Impacts Associated with Alternative 6 with Mitigation, 2004-2073

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 6	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	97×10^{-6} (97 in a million)	14×10^{-6} (14 in a million)	**83×10^{-6} (83 in a million)**	9.1×10^{-6} (9.1 in a million)	**88×10^{-6} (88 in a million)**	10×10^{-6} 10 in a million
	Occupational	86×10^{-6} (86 in a million)	11×10^{-6} (11 in a million)	**76×10^{-6} (76 in a million)**	7.5×10^{-6} (7.5 in a million)	**79×10^{-6} (79 in a million)**	
	Sensitive	26×10^{-6} (26 in a million)	2.3×10^{-6} (2.3 in a million)	**24×10^{-6} (24 in a million)**	2.1×10^{-6} (2.1 in a million)	**24×10^{-6} (24 in a million)**	
	Student	0.7×10^{-6} (0.7 in a million)	0.1×10^{-6} (0.1 in a million)	0.7×10^{-6} (0.7 in a million)	0.1×10^{-6} (0.1 in a million)	0.7×10^{-6} (0.7 in a million)	
	Recreational	111×10^{-6} (111 in a million)	18×10^{-6} (18 in a million)	**99×10^{-6} (99 in a million)**	9.9×10^{-6} (9.9 in a million)	**102×10^{-6} (102 in a million)**	
Chronic Hazard Index	Residential	0.28	0.14	0.14	0.12	0.16	1.0
	Occupational	0.96	0.43	0.62	0.39	0.57	
	Sensitive	0.07	0.02	0.05	0.03	0.04	
	Student	0.07	0.02	0.05	0.03	0.04	
	Recreational	0.81	0.43	0.55	0.33	0.50	
Acute Hazard Index	Residential	1.10	0.13	**1.08**	0.24	**1.04**	1.0
	Occupational	1.71	0.22	**1.69**	0.38	**1.62**	
	Sensitive	0.94	0.04	0.90	0.14	0.88	
	Student	0.94	0.04	0.90	0.14	0.88	
	Recreational	1.36	0.22	**1.32**	0.34	**1.24**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.
b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.
c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.
d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.
e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.
f) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.
g) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.
h) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

The maximum chronic hazard index NEPA increment is predicted to be below the significance threshold of 1.0 at all receptors. The acute hazard index NEPA increment is predicted to be above the significance threshold of 1.0 and, therefore, is considered significant for several receptors, including the residential receptor.

Table 3.2-123 presents results of the 2009-2078 HRA. The results are provided for information purposes only and were not used to determine significance. However, the 2009-2078 HRA results indicate that the mitigation measures imposed by the Port starting in 2009 would further reduce the maximum cancer risk impacts relative to the 2004-2073 mitigated HRA levels.

Table 3.2-123. Maximum Health Impacts Associated with Alternative 6 with Mitigation, 2009-2078

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Alternative 6	CEQA Baseline	CEQA Increment	NEPA Baseline	NEPA Increment	
Cancer Risk	Residential	67×10^{-6} (67 in a million)	14×10^{-6} (14 in a million)	**52×10^{-6} (52 in a million)**	3.6×10^{-6} (3.6 in a million)	**63×10^{-6} (63 in a million)**	10×10^{-6} 10 in a million
	Occupational	59×10^{-6} (59 in a million)	11×10^{-6} (11 in a million)	**49×10^{-6} (49 in a million)**	3.0×10^{-6} (3.0 in a million)	**56×10^{-6} (56 in a million)**	
	Sensitive	18×10^{-6} (18 in a million)	2.3×10^{-6} (2.3 in a million)	**16×10^{-6} (16 in a million)**	0.8×10^{-6} (0.8 in a million)	**18×10^{-6} (18 in a million)**	
	Student	0.5×10^{-6} (0.5 in a million)	0.1×10^{-6} (0.1 in a million)	0.5×10^{-6} (0.5 in a million)	0.02×10^{-6} (0.02 in a million)	0.5×10^{-6} (0.5 in a million)	
	Recreational	76×10^{-6} (76 in a million)	18×10^{-6} (18 in a million)	**64×10^{-6} (64 in a million)**	4.0×10^{-6} (4.0 in a million)	**73×10^{-6} (73 in a million)**	

Notes:

a) The 2009-2078 HRA is for informational purposes only. It shows the risks that would occur over a 70-year exposure period starting in 2009, the first year that the Port is able to implement a wide array of mitigation measures.

b) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

c) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impact. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

d) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

g) For the acute hazard index, two possible maximum 1-hour scenarios were modeled: (1) one ship hoteling and one ship harbor transiting, turning, and docking; and (2) two ships hoteling. The scenario that yielded the highest result is reported for each impact type.

h) The NEPA baseline emissions include as Project elements the terminal equipment measures in the Amended Stipulated Judgment, implementation of CAAP Measure CHE-1 starting in 2009, and 100 percent alternative fueled toppicks starting in 2009.

i) Construction emissions were modeled with the operational emissions during the periods where construction emissions overlap with operations.

Alt 6 – Impact AQ-8: Alternative 6 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required for Alternative 6.

Residual Impacts

Impacts would be less than significant.

Alt 6 – Impact AQ-9: Alternative 6 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-124 summarizes the total GHG construction emissions associated with Alternative 6. Table 3.2-125 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 6.

Table 3.2-124. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 6

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.2	0.0	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100	840	0.1	0.0	846
Crane Delivery and Installation	87	0.0	0.0	87
Berth 100 72-Acre Backlands Development	619	0.1	0.0	623
Construction of Bridge 1	33	0.0	0.0	34
Berth 121 Gate Modifications	29	0.0	0.0	29
Worker Trips	1,025	0.2	0.1	1,073
Phase II				
Construct Berth 102	418	0.0	0.0	421
Construct Berth 100-109 Buildings	90	0.0	0.0	90
Construct 18 of 45-acre Backlands	253	0.0	0.0	255
Construct Bridge 2	34	0.0	0.0	34
Construct 17 of 45-acre Backland(b)	238	0.0	0.0	239

Table 3.2-124. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 6

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Construct 10 of 45-acre Backlands	141	0.0	0.0	142
Crane Delivery and Installation	153	0.0	0.0	154
Worker Trips	833	0.2	0.1	880
Phase III				
South Extension of Berth 100	1,246	0.1	0.0	1,253
Construct 25-acre Backlands (Behind Berth 100)	375	0.0	0.0	377
Worker Trips	833	0.2	0.1	880
Total Emissions	**8,540**	**1.48**	**0.47**	**8,717**
CEQA Impact [e]	**8,540**	**1.48**	**0.47**	**8,717**
NEPA Impact [e]	**5,430**	**0.83**	**0.19**	**5,506**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total project construction emissions minus NEPA baseline emissions. The NEPA baseline construction emissions are reported in Table 3.2-12.

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Table 3.2-125. Annual Operational GHG Emissions – Alternative 6 without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	14,446	1.91	0.13	0	0	0	14,526
Ships – Hoteling	3,311	0.44	0.03	0	0	0	3,329
Tugboats	298	0.04	0.00	0	0	0	300
Trucks	73,164	3.81	1.91	0	0	0	73,836
Trains	1,232	0.17	0.01	0	0	0	1,240
Rail Yard Equipment	507	0.04	0.01	0	0	0	510
Terminal Equipment	22,905	2.51	0.28	0	0	0	23,044
Reefer Refrigerant Losses	0	0.00	0.00	0.03	0.06	0.03	268
AMP Usage	0	0.00	0.00	0	0	0	0.0
On-Terminal Electricity Usage	1,706	0.01	0.01	0	0	0	1,708
Worker Trips	271	0.08	0.04	0	0	0	286
Total For Project Year 2005	**117,841**	**9.02**	**2.41**	**0.03**	**0.06**	**0.03**	**119,047**

Table 3.2-125. Annual Operational GHG Emissions – Alternative 6 without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
CEQA Baseline	2,433	0.75	0.03	0	0	0	2,457
Project Minus CEQA Baseline	**115,408**	**8.27**	**2.39**	**0.03**	**0.06**	**0.03**	**116,590**
NEPA Baseline	24,126	21	0	0	0	0	24,668
Project Minus NEPA Baseline	**93,716**	**-11.90**	**2.08**	**0.03**	**0.06**	**0.03**	**94,380**
Project Year 2015							
Ships – Transit	42,967	5.67	0.38	0	0	0	43,203
Ships – Hoteling	7,014	0.93	0.06	0	0	0	7,053
Tugboats	894	0.12	0.01	0	0	0	899
Trucks	219,762	10.96	5.48	0	0	0	221,691
Trains	3,274	0.46	0.03	0	0	0	3,293
Rail Yard Equipment	1,375	0.01	0.02	0	0	0	1,380
Terminal Equipment	66,641	2.12	0.80	0	0	0	66,935
Reefer Refrigerant Losses	0	0.00	0.00	0.07	0.17	0.08	726
AMP Usage	0	0.00	0.00	0	0	0	0.0
On-Terminal Electricity Usage	1,827	0.02	0.01	0	0	0	1,830
Worker Trips	730	0.22	0.12	0	0	0	771
Total For Project Year 2015	**344,484**	**20.50**	**6.91**	**0.07**	**0.17**	**0.08**	**347,783**
CEQA Baseline	2,433	0.75	0.03	0	0	0	2,457
Project Minus CEQA Baseline	**342,050**	**19.75**	**6.88**	**0.07**	**0.17**	**0.08**	**345,326**
NEPA Baseline	28,259	1	0	0	0	0	28,295
Project Minus NEPA Baseline	**316,224**	**19.63**	**6.86**	**0.07**	**0.17**	**0.08**	**319,488**
Project Year 2030							
Ships – Transit	56,693	7.48	0.50	0	0	0	57,005
Ships – Hoteling	9,694	1.29	0.09	0	0	0	9,749
Tugboats	1,424	0.20	0.01	0	0	0	1,432
Trucks	347,276	16.86	8.43	0	0	0	350,244
Trains	3,983	0.56	0.04	0	0	0	4,007
Rail Yard Equipment	1,672	0.01	0.02	0	0	0	1,679
Terminal Equipment	111,647	1.17	1.35	0	0	0	112,090
Reefer Refrigerant Losses	0	0.00	0.00	0.09	0.21	0.11	937
AMP Usage	0	0.00	0.00	0	0	0	0.0
On-Terminal Electricity Usage	1,934	0.02	0.01	0	0	0	1,937
Worker Trips	866	0.26	0.14	0	0	0	915
Total Project Year 2030	**535,191**	**27.84**	**10.59**	**0.09**	**0.21**	**0.11**	**539,995**
CEQA Baseline	2,433	0.75	0.03	0	0	0	2,457
Project Minus CEQA Baseline	**532,757**	**27.08**	**10.56**	**0.09**	**0.21**	**0.11**	**537,537**

Table 3.2-125. Annual Operational GHG Emissions – Alternative 6 without Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	*CH_4*	*N_2O*	HFC-125	HFC-134a	HFC-143a	CO_2e
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**506,900**	**26.90**	**10.54**	**0.09**	**0.21**	**0.11**	**511,668**
Project Year 2045							
Ships – Transit	56,693	7.48	0.50	0	0	0	57,005
Ships – Hoteling	9,694	1.29	0.09	0	0	0	9,749
Tugboats	1,424	0.20	0.01	0	0	0	1,432
Trucks	347,416	16.86	8.43	0	0	0	350,384
Trains	3,983	0.56	0.04	0	0	0	4,007
Rail Yard Equipment	1,672	0.01	0.02	0	0	0	1,679
Terminal Equipment	111,647	1.17	1.35	0	0	0	112,090
Reefer Refrigerant Losses	0	0.00	0.00	0.09	0.21	0.11	937
AMP Usage	0	0.00	0.00	0	0	0	0.0
On-Terminal Electricity Usage	1,934	0.02	0.01	0	0	0	1,937
Worker Trips	885	0.26	0.14	0	0	0	935
Total Project Year 2045	**535,349**	**27.84**	**10.59**	**0.09**	**0.21**	**0.11**	**540,155**
CEQA Baseline	2,433	0.75	0.03	0	0	0	2,457
Project Minus CEQA Baseline	**532,916**	**27.09**	**10.57**	**0.09**	**0.21**	**0.11**	**537,697**
NEPA Baseline	28,291	1	0	0	0	0	28,327
Project Minus NEPA Baseline	**507,059**	**26.94**	**10.54**	**0.09**	**0.21**	**0.11**	**511,828**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

CEQA Impact Determination

Table 3.2-124 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-125 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 6 would produce significant levels of GHG emissions under CEQA.

NEPA Impact Determination

Table 3.2-124 shows that total CO_2e emissions during project construction would exceed NEPA baseline construction emissions. In addition, the data in Table 3.2-125 show that in each future Project year, annual operational CO_2e emissions would increase from NEPA baseline levels.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 6 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2** through **MM AQ-4** for construction; and **MM AQ-9, MM AQ-10**, **MM AQ-20, MM AQ**-21, and **MM AQ-25** through **MM AQ-30** for operations.

Table 3.2-126 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP), **MM AQ-10** (VSRP), and **MM AQ-20** (LNG trucks) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for **Impact AQ-9**.

Table 3.2-126. Annual Operational GHG Emissions – Alternative 6 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
Project Year 2005							
Ships – Transit	14,446	1.9	0.1	0	0	0	14,526
Ships – Hoteling	3,311	0.4	0.0	0	0	0	3,329
Tugboats	298	0.0	0.0	0	0	0	300
Trucks	73,164	3.8	1.9	0	0	0	73,836
Trains	1,232	0.2	0.0	0	0	0	1,240
Rail Yard Equipment	507	0.0	0.0	0	0	0	510
Terminal Equipment	22,905	2.5	0.3	0	0	0	23,044
Reefer Refrigerant Losses	0	0.0	0.0	0.03	0.06	0.03	268
AMP Usage	0	0.0	0.0	0	0	0	0.0
On-Terminal Electricity Usage	1,706	0.0	0.0	0	0	0	1,708
Worker Trips	271	0.1	0.0	0	0	0	286
Total For Project Year 2005	**117,841**	**9.0**	**2.4**	**0.03**	**0.06**	**0.03**	**119,047**
CEQA Baseline	2,433	0.8	0.0	0	0	0	2,457
Project Minus CEQA Baseline	**115,408**	**8.3**	**2.4**	**0.03**	**0.06**	**0.03**	**116,590**
NEPA Baseline	24,126	20.9	0.3	0	0	0	24,668
Project Minus NEPA Baseline	**93,716**	**-11.9**	**2.1**	**0.03**	**0.06**	**0.03**	**94,380**
Project Year 2015							
Ships – Transit	21,064	2.9	0.2	0	0	0	21,189
Ships – Hoteling	4,855	0.7	0.1	0	0	0	4,884
Tugboats	894	0.1	0.0	0	0	0	899
Trucks	114,403	270.3	5.5	0	0	0	121,778
Trains	3,274	0.5	0.0	0	0	0	3,293
Rail Yard Equipment	1,375	0.0	0.0	0	0	0	1,380
Terminal Equipment	63,683	1.0	0.6	0	0	0	63,900
Reefer Refrigerant Losses	0	0.0	0.0	0.07	0.17	0.08	726
AMP Usage	1,030	0.0	0.0	0	0	0	1,032.1

Table 3.2-126. Annual Operational GHG Emissions – Alternative 6 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
On-Terminal Electricity Usage	1,827	0.0	0.0	0	0	0	1,830
Worker Trips	730	0.2	0.1	0	0	0	771
Total For Project Year 2015	**213,135**	**275.7**	**6.6**	**0.07**	**0.17**	**0.08**	**221,684**
CEQA Baseline	2,433	0.8	0.0	0	0	0	2,457
Project Minus CEQA Baseline	**210,702**	**275.0**	**6.5**	**0.07**	**0.17**	**0.08**	**219,226**
NEPA Baseline	28,259	0.9	0.1	0	0	0	28,295
Project Minus NEPA Baseline	**184,875**	**274.8**	**6.5**	**0.07**	**0.17**	**0.08**	**193,389**
Project Year 2030							
Ships – Transit	30,169	4.2	0.3	0	0	0	30,348
Ships – Hoteling	3,992	0.6	0.1	0	0	0	4,016
Tugboats	1,424	0.2	0.0	0	0	0	1,432
Trucks	105,265	586.8	8.4	0	0	0	120,201
Trains	3,983	0.6	0.0	0	0	0	4,007
Rail Yard Equipment	1,672	0.0	0.0	0	0	0	1,679
Terminal Equipment	107,673	1.7	1.1	0	0	0	108,056
Reefer Refrigerant Losses	0	0.0	0.0	0.09	0.21	0.11	937
AMP Usage	2,862	0.0	0.0	0	0	0	2,866.2
On-Terminal Electricity Usage	1,934	0.0	0.0	0	0	0	1,937
Worker Trips	866	0.3	0.1	0	0	0	915
Total Project Year 2030	**259,840**	**594.3**	**10.1**	**0.09**	**0.21**	**0.11**	**276,394**
CEQA Baseline	2,433	0.8	0.0	0	0	0	2,457
Project Minus CEQA Baseline	**257,406**	**593.6**	**10.1**	**0.09**	**0.21**	**0.11**	**273,936**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**231,549**	**593.4**	**10.1**	**0.09**	**0.21**	**0.11**	**248,066**
Project Year 2045							
Ships – Transit	30,169	4.2	0.3	0	0	0	30,348
Ships – Hoteling	3,992	0.6	0.1	0	0	0	4,016
Tugboats	1,424	0.2	0.0	0	0	0	1,432
Trucks	105,265	586.8	8.4	0	0	0	120,201
Trains	3,983	0.6	0.0	0	0	0	4,007
Rail Yard Equipment	1,672	0.0	0.0	0	0	0	1,679
Terminal Equipment	107,673	1.7	1.1	0	0	0	108,055
Reefer Refrigerant Losses	0	0.0	0.0	0.09	0.21	0.11	937
AMP Usage	2,862	0.0	0.0	0	0	0	2,866.2
On-Terminal Electricity Usage	1,934	0.0	0.0	0	0	0	1,937
Worker Trips	885	0.3	0.1	0	0	0	935
Total Project Year 2045	**259,858**	**594.3**	**10.1**	**0.09**	**0.21**	**0.11**	**276,413**

Table 3.2-126. Annual Operational GHG Emissions – Alternative 6 with Mitigation

Project Scenario/ Source Type	Metric Tons Per Year						
	CO_2	CH_4	N_2O	HFC-125	HFC-134a	HFC-143a	CO_2e
CEQA Baseline	2,433	0.8	0.0	0	0	0	2,457
Project Minus CEQA Baseline	**257,425**	**593.5**	**10.1**	**0.09**	**0.21**	**0.11**	**273,955**
NEPA Baseline	28,291	0.9	0.1	0	0	0	28,327
Project Minus NEPA Baseline	**231,568**	**593.4**	**10.1**	**0.09**	**0.21**	**0.11**	**248,086**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a

Residual Impacts

Significant impacts would remain under CEQA.

3.2.4.4.1.7 Alternative 7 – Nonshipping Use

Alternative 7 would convert the existing site into a Regional Center, which would generally be considered as a mixed-use center with major retail tenants serving as "anchor" uses; office park uses; and light industrial uses supporting maritime activities such as machine shops, marine vessel chandlers, and marine supply stores. In addition, a public dock would be constructed to support the onsite retail and restaurant uses. Section 2.5.1.7 presents a comprehensive description of Alternative 7.

Alt 7 – Impact AQ-1: Alternative 7 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-14.

Retail, office, light industrial uses, and associated parking are proposed under Alternative 7 to replace shipping uses. As a result, the construction activities for Alternative 7 would be substantially different than the other proposed Project alternatives. Therefore, to calculate the emissions from the construction of Alternative 7, the URBEMIS2007 emissions model was used (CARB, 2004a). Construction of Alternative 7 is anticipated to occur over two phases, the first starting in 2009 and the second starting in 2010, with each phase lasting 2 years (as estimated by URBEMIS2007). Each phase of construction would include site grading and building construction. Alternative 7 construction emissions without mitigation are shown in Table 3.2-127.

Table 3.2-127. Peak Daily Emissions Associated with Berth 97-109 Terminal Construction Activities – Alternative 7 Without Mitigation

Activity	Daily Emissions (lb/day)					
	VOC [c]	CO	NO_X	SO_X	PM_{10} [d]	$PM_{2.5}$ [d]
Phase II						
Crane Removal [f]	46	117	1,302	1,452	154	123
Site Preparation – 2009 [a]	9.9	44	83	0.02	429	93
Site Preparation - 2010 [a,b]	9.0	19	38	0.02	2.6	2.3
Building construction – 2010	21	270	169	0.4	9.65	8
Building construction - 2011	1,983	252	153	0.4	8.93	7
Total – Peak Daily Emissions [g]	**1,983**	**270**	**1,385**	**1,452**	**583**	**216**
CEQA Impact [h]	**1,983**	**270**	**1,385**	**1,452**	**583**	**216**
NEPA Impact [h]	**1,959**	**143**	**1,159**	**1,452**	**544**	**204**
Thresholds	75	550	100	150	150	55
CEQA Significant?	Yes	No	Yes	Yes	Yes	Yes
NEPA Significant?	Yes	No	Yes	Yes	Yes	Yes

Notes:

a) Site Preparation includes demolition, grading, trenching, and paving

b) Site Preparation and Building Construction phases do not overlap.

c) Assumes compliance with SCAQMD Rule 1113 limiting the amount of VOC present in architectural coating to 100 grams/liter for flat coatings.

d) Assumes compliance with SCAQMD Rule 403 limiting emissions of fugitive dust.

e) Construction equipment types and counts were based on URBEMIS2007 default values for the given building square footage and site acreage with additional modifications based on site-specific construction details.

f) Crane removal would overlap with site preparation but not building construction.

g) Total peak daily emissions would occur during the following activities: Building Construction 2011 for VOC; Building Construction 2010 for CO; and Crane Removal plus Site Preparation 2009 for NO_X, SO_X, PM_{10}, and $PM_{2.5}$.

h) The CEQA Impact equals total Project construction emissions, because there are no construction emissions associated with the CEQA baseline. The NEPA impact equals total Project construction emissions minus NEPA baseline emissions. NEPA baseline emissions are the peak daily NEPA construction emissions during Phase II, as reported in Table 3.2-9.

CEQA Impact Determination

Without mitigation, construction of Alternative 7 would exceed the SCAQMD daily emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to Alternative 7. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Based on the anticipated effectiveness of these mitigation measures as estimated for the proposed Project (Table 3.2-20), construction emissions would be reduced but would remain above the SCAQMD daily thresholds. Therefore, despite implementation of mitigation and compliance with SCAQMD Rule 403, construction emissions of VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ would exceed SCAQMD daily thresholds and would remain significant.

Residual Impacts

The residual air quality impacts would be temporary but significant.

NEPA Impact Determination

Without mitigation, construction of Alternative 7 would exceed the SCAQMD daily emission thresholds for VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1** through **MM AQ-8** would apply to Alternative 7. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Based on the anticipated effectiveness of these mitigation measures as estimated for the proposed Project (Table 3.2-20), construction emissions would be reduced but would remain above the SCAQMD daily thresholds. Therefore, despite implementation of mitigation and compliance with SCAQMD Rule 403, construction emissions of VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ would exceed SCAQMD daily thresholds and would remain significant.

Residual Impacts

The residual air quality impacts would be temporary but significant.

Alt 7 – Impact AQ-2: Alternative 7 construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-15.

Peak daily onsite construction emissions for Alternative 7 would be greater than the proposed Project Phase II and III construction emissions for VOC, and slightly greater for PM_{10}. Peak daily onsite construction emissions for Alternative 7 would be about half the proposed Project CO and $PM_{2.5}$ emissions, and much less than the proposed Project NO_X and SO_X emissions.

CEQA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

The dispersion modeling analysis for the construction Phases II and III of the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, or $PM_{2.5}$ significance thresholds. Based on the relative difference in construction emissions between Alternative 7 and the proposed Project, Alternative 7 is also unlikely to result in an exceedance of these thresholds.

Alternative 7 NO_X construction emissions are much less than the proposed Project construction emissions; therefore, the maximum offsite ambient pollutant concentrations of NO_X associated with Alternative 7 would not exceed the significance threshold. Therefore, no significant impacts under CEQA would occur during Phase II of construction for Alternative 7.

NEPA Impact Determination

Maximum offsite ambient pollutant concentrations associated with Phase I construction were significant for NO_X and PM_{10}.

The dispersion modeling analysis for the construction Phases II and III of the proposed Project (Table 3.2-21) predicted no exceedances of the CO, PM_{10}, or $PM_{2.5}$ significance thresholds. Based on the relative difference in construction emissions between Alternative 7 and the proposed Project, Alternative 7 is also unlikely to result in an exceedance of these thresholds.

Alternative 7 NO_X construction emissions are much less than the proposed Project construction emissions; therefore, the maximum offsite ambient pollutant concentrations of NO_X associated with Alternative 7 would not exceed the significance threshold. Therefore, no significant impacts under NEPA would occur during Phase II of construction for Alternative 7.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1** was applied to Phase I, and **MM AQ-1** through **MM AQ-8** would be applied to Phases II and III. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, offsite ambient concentrations from Phase I construction activities remained significant for NO_X and PM_{10}. However, offsite ambient concentrations from Phase II construction activities would be below the significance thresholds for all pollutants.

Residual Impacts

The residual air quality impacts would be temporary but significant for NO_X and PM_{10} in Phase I only.

Alt 7 – Impact AQ-3: Alternative 7 would result in operational emissions that exceed the SCAQMD threshold of significance in Table 3.2-16.

Retail, office, light industrial uses, and associated parking are proposed under Alternative 7 to replace shipping uses. As a result, the operational activities for Alternative 7 are substantially different than the other proposed Project alternatives. Therefore, operational emissions associated with this alternative were calculated using the URBEMIS2007 model. URBEMIS2007 is designed to estimate operational emissions from area sources (natural gas combustion and landscaping) and mobile sources (proposed Project-generated automobile trips). Additionally, for Alternative 7, construction activities would not substantially overlap with operational activities. Therefore, an emissions analysis of overlapping construction and operations was not performed for this alternative.

For Alternative 7, generated automobile trips would be the dominant source of operational emissions. In both 2015 and 2030, the proposed Project would generate an estimated 24,003 daily vehicle trips, distributed as follows (MMA, 2005):

- Retail: 11,862 daily trips
- Office: 3,155 daily trips
- Light industrial: 8,986 daily trips

Table 3.2-128 presents daily criteria pollutant emissions associated with the operation of Alternative 7, before mitigation. Emissions were estimated only for 2015, 2030, and 2045 because operation of the Project would not begin until after 2005.

Table 3.2-128. Daily Emissions Associated with Operations at the Berth 97-109 Terminal – Alternative 7

Emission Source	Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2015						
Area Sources	12	9	5	0	0	0
Mobile Sources	132	1666	178	2	408	79
Total – Project Year 2015	**143**	**1675**	**184**	**2**	**408**	**79**
CEQA Impacts						
Baseline Emissions	60	225	566	10	31	29
Project minus baseline	83	1,450	-382	-8	377	50
Thresholds	55	550	55	150	150	55
Significant?	Yes	Yes	No	No	Yes	No
NEPA Impacts						
Baseline Emissions	7	852	72	0	3	3
Project minus baseline	136	823	112	2	405	76
Thresholds	55	550	55	150	150	55
Significant?	Yes	Yes	Yes	No	Yes	Yes
Project Year 2030						
Area Sources	12	9	5	0	0	0
Mobile Sources	71	801	72	2	408	79
Total – Project Year 2030	**82**	**810**	**77**	**2**	**408**	**79**
CEQA Impacts						
Baseline Emissions	60	225	566	10	31	29
Project minus baseline	22	585	-489	-8	376	50
Thresholds	55	550	55	150	150	55
Significant?	No	Yes	No	No	Yes	No
NEPA Impacts						
Baseline Emissions	8	889	76	0	3	3
Project minus baseline	74	-79	1	2	405	76
Thresholds	55	550	55	150	150	55
Significant?	Yes	No	No	No	Yes	Yes
Project Year 2045						
Area Sources	12	9	5	0	0	0
Mobile Sources	63	695	55	3	408	79
Total – Project Year 2045	**75**	**704**	**60**	**3**	**408**	**79**
CEQA Impacts						
Baseline Emissions	60	225	566	10	31	29
Project minus baseline	15	478	-506	-8	376	50
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	Yes	No

Table 3.2-128. Daily Emissions Associated with Operations at the Berth 97-109 Terminal – Alternative 7

Emission Source	Daily Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
Baseline Emissions	8	868	75	0	3	3
Project minus baseline	67	-164	-15	3	405	76
Thresholds	55	550	55	150	150	55
Significant?	Yes	No	No	No	Yes	Yes

Notes:

a) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest URBEMIS2007 model, available data, and available assumptions at the time this document was prepared. Future studies might use updated data and assumptions that are not currently available.

CEQA Impact Determination

From a CEQA perspective, Alternative 7 emissions would exceed CEQA baseline emissions for VOC, CO, PM_{10}, and $PM_{2.5}$ in 2015, 2030, and 2045. These increases would exceed the SCAQMD daily emission thresholds for VOC, CO, and PM_{10} in 2015, CO and PM_{10} in 2030, and only PM_{10} in 2045. In summary, from a CEQA perspective, the unmitigated air quality impacts associated with Alternative 7 would be significant for VOC, CO, PM_{10} in 2015, CO and PM_{10} in 2030, and PM_{10} in 2045.

NEPA Impact Determination

From a NEPA perspective, Alternative 7 emissions would exceed NEPA baseline emissions for all pollutants in 2015, all pollutants except CO in 2030, and all pollutants except CO and NO_X in 2045. These increases would exceed the SCAQMD daily emission thresholds for all pollutants except SO_X in 2015; and VOC, PM_{10}, and $PM_{2.5}$ in 2030 and 2045. In summary, from a NEPA perspective, the unmitigated air quality impacts associated with Alternative 7 would be significant for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ in 2015; and VOC, PM_{10}, and $PM_{2.5}$ in 2030 and 2045.

The light industrial uses proposed for this alternative could also generate emissions from stationary emission sources. Examples of stationary sources that are often associated with light industrial land uses include, but are not limited to, paint spray booths, solvent dip tanks, and process heaters. Whether the light industrial uses would include stationary emission sources is not known at this time, nor is it known what types of sources might be used. Therefore, emissions from possible stationary emission sources have not been quantified for this alternative. Any new stationary emission source would be required to obtain an operating permit from SCAQMD to ensure that its air quality impacts would not be significant.

Alternative 7 also proposes the construction of a public dock to support the retail and restaurant uses on the Project site. This dock would provide services and access to small watercraft, such as small boats, kayaks, and jet skis. Watercraft emissions associated with use of the public dock were not quantified for Alternative 7. Given that the number of watercraft using the public dock would be low compared to the number of on-road vehicle trips, emissions from small watercraft are not anticipated to affect the conclusions described above.

Mitigation Measures

Operational emissions associated with this alternative are primarily associated with automobile trips. Because **MM AQ-9** through **MM AQ-24** target marine container terminal-related sources, they would not apply to Alternative 7. Therefore, the mitigation measure below would reduce criteria pollutant emissions associated with operation of Alternative 7. This mitigation measure would be implemented by the responsible parties identified in Section 3.2.4.5.

MM AQ-31: Offsite pedestrian facility improvements, such as overpasses and wider sidewalks, and onsite pedestrian facility improvements, such as building access that is physically separated from street and parking lot traffic and walk paths, shall be constructed.

According to the SCAQMD *CEQA Air Quality Handbook,* constructing offsite and onsite pedestrian facilities can reduce VOC emissions by 0.2 to 1.2 percent, and CO, NO_X, and PM_{10} emissions by 0.2 to 1.6 percent (SCAQMD, 1993).

Residual Impacts

The daily operational emissions associated with Alternative 7 with implementation of **MM AQ-31** would slightly reduce emissions of VOC, CO, NO_X, $PM_{10,}$ and $PM_{2.5}$ after 2015 relative to unmitigated emissions. However, because the mitigation effectiveness is relatively slight, all of the CEQA and NEPA impacts described above for unmitigated emissions would still remain after mitigation.

From a CEQA perspective, the air quality impacts associated with Alternative 7 after mitigation would remain significant for VOC, CO, PM_{10} in 2015, CO and PM_{10} in 2030, and PM_{10} in 2045.

From a NEPA perspective, the air quality impacts associated with Alternative 7 after mitigation would remain significant for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ in 2015; and VOC, PM_{10}, and $PM_{2.5}$ in 2030 and 2045.

Alt 7 – Impact AQ-4: Alternative 7 operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

The primary source of criteria pollutant emissions associated with the Nonshipping Alternative would be automobile trips from visitors, patrons, and employees. Because these trips would originate from locations throughout the Wilmington, San Pedro, and Long Beach areas and beyond, much of the emissions from these sources would tend to be dispersed throughout the region rather than concentrated at the Project site.

Furthermore, the land use and associated vehicle trips for this alternative would resemble other commercial and light industrial areas found throughout the South Coast Air Basin. Therefore, because the air basin meets the ambient air quality standards for CO and NO_2, this alternative is not expected to cause a violation of the CO or NO_2 standards.

However, the air basin currently does not meet the ambient air quality standards for $PM_{2.5}$ or PM_{10}. As shown in Table 3.2-17, the SCAQMD considers a project's operational impact to be significant if the project increases ambient PM_{10} or $PM_{2.5}$ concentrations by at least 2.5 $\mu g/m^3$ at an offsite receptor for a 24-hour average. Based on the dispersion modeling results for offsite truck trips for the proposed Project, it is estimated that the offsite vehicle trips associated with Alternative 7 would generate ambient PM_{10} and $PM_{2.5}$ levels exceeding the significance threshold of 2.5 $\mu g/m^3$ at receptors near heavily traveled Project-affected roadways.

CEQA Impact Determination

This alternative would generate vehicle trips that would produce a significant incremental increase in PM_{10} and $PM_{2.5}$ concentrations relative to the CEQA baseline. This is considered a significant CEQA impact.

NEPA Impact Determination

This alternative would generate vehicle trips that would produce a significant incremental increase in PM_{10} and $PM_{2.5}$ concentrations relative to the NEPA baseline. This is considered a significant NEPA impact.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during proposed Project operations would be the same as measure **MM AQ-31** described above for **Impact AQ-3**. This mitigation measure would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Because the effectiveness of the mitigation measures would be relatively slight, the CEQA and NEPA impacts after mitigation would remain significant for PM_{10} and $PM_{2.5}$.

Alt 7 – Impact AQ-5: Alternative 7 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

Alternative 7 would generate more vehicle trips than the proposed Project, although the vehicle trips primarily would be automobiles instead of heavy-duty trucks. Although automobiles produce slightly less CO emissions on a per-mile basis than heavy-duty diesel trucks, Alternative 7 would nevertheless generate greater CO emissions and higher CO concentrations at many local intersections compared to the proposed Project because of the greater number of vehicle trips. However, because the CO concentrations predicted for the proposed Project are below the CO standards by a sufficient margin, and because the trucks associated with the proposed Project contributed only a small fraction of the total CO impact from the modeled roadway intersection, the concentrations associated with Alternative 7 are expected to also remain below (although closer to) the CO standards.

CEQA Impact Determination

Significant impacts under CEQA are not anticipated because CO standards would not be exceeded.

NEPA Impact Determination

Significant impacts under NEPA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant.

Alt 7 – Impact AQ-6: Alternative 7 would not create an objectionable odor at the nearest sensitive receptor.

This alternative consists of retail, offices, and light industrial uses. Retail and office uses typically do not create objectionable odors. Because the light industrial uses could be dedicated to supporting maritime activities, the possibility exists that the industrial uses would generate emissions that could be considered odorous. The distance between the Project site and the nearest residences is expected to be far enough to allow for adequate dispersion of emissions to below objectionable odor levels. Thus, the potential for the Alternative 7 to produce objectionable odors that would affect a sensitive receptor is low.

CEQA Impact Determination

Based on the analysis presented above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; therefore, significant odor impacts under CEQA are not anticipated.

NEPA Impact Determination

Based on the analysis presented above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; therefore, significant odor impacts under NEPA are not anticipated.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant.

Alt 7 – Impact AQ-7: Alternative 7 would not expose receptors to significant levels of toxic air contaminants.

Because the main source of emissions for Alternative 7 would be automobile trips (primarily gasoline powered), this alternative would generate only a small fraction of the DPM emissions that the proposed Project would generate. As a result, the maximum cancer risks and chronic hazard index values associated with this alternative relative to the CEQA and NEPA baselines are expected to be less than the significance thresholds at all receptors.

CEQA Impact Determination

The maximum individual lifetime cancer risk, maximum chronic hazard index, and maximum acute hazard index increments associated with this alternative are expected to be less than significant for all receptors.

NEPA Impact Determination

The maximum individual lifetime cancer risk, maximum chronic hazard index, and maximum acute hazard index increments associated with this alternative are expected to be less than significant for all receptors.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant under CEQA.

Alt 7 – Impact AQ-8: Alternative 7 would not conflict with or obstruct implementation of an applicable AQMP.

This alternative would comply with SCAQMD rules and regulations. AQMP growth assumptions are generated by SCAG. SCAG derives its population and employment growth assumptions, in part, based on the General Plans of cities located within the SCAG region. Therefore, if a project does not exceed the growth projections in the General Plan, then the project is consistent with the growth assumptions in the AQMP.

The SCAG population, housing, and employment projections do not take into account the development of this site as a Regional Center. Although this alternative would increase employment opportunities on the Project site and surrounding area, Alternative 7 is not expected to result in or induce substantial or significant population or land use development growth. This is because the majority of the new jobs that would be created by this alternative are expected to be filled by persons who already reside in the City or nearby areas. Such new employment would be considered a benefit to the local economy. To the extent that this alternative results in minor growth pressures, potential growth is expected to occur within the context of existing land use plans, zoning, and other land use conditions and controls.

CEQA Impact Determination

This alternative is not expected to result in significant conflicts with the growth assumptions inherent in the AQMP or obstruct the implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

NEPA Impact Determination

This alternative is not expected to result in significant conflicts with the growth assumptions inherent in the AQMP or obstruct the implementation of the AQMP; therefore, significant impacts under NEPA are not anticipated.

Mitigation Measures

Impacts would be less than significant; therefore, mitigation is not required.

Residual Impacts

Impacts would be less than significant.

Alt 7 – Impact AQ-9: Alternative 7 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-129 summarizes the total GHG construction emissions associated with Alternative 7. The emissions are totaled over the entire multiple-year construction period. The construction sources for which GHG emissions were calculated include off road construction equipment, on-road trucks, marine cargo vessels used to deliver and remove equipment to the site, and worker commute vehicles.

Table 3.2-129. Total GHG Emissions from Berth 97-109 Terminal Construction Activities – Alternative 7

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons)			
Phase I				
Construction of a 1,000-foot Wharf at Berth 100	1,293	0.2	0.0	1,302
Construction of a 200-foot North Extension of Wharf at Berth 100	840	0.1	0.0	846
Crane Delivery and Installation	87	0.0	0.0	87
Berth 100 72-Acre Backlands Development	619	0.1	0.0	623
Construction of Bridge 1	33	0.0	0.0	34
Berth 121 Gate Modifications	29	0.0	0.0	29
Worker Trips	1,025	0.2	0.1	1,073
Phase II				
Crane Removal	153	0.0	0.0	154
Site Preparation – 2009	445	0	0	445
Site Preparation – 2010	18	0	0	18
Building construction – 2010	4372	0	0	4372
Building construction - 2011	881	0	0	881
Total Emissions	**9,795**	**1**	**0**	**9,862**
CEQA Impact [f]	**9,795**	**1**	**0**	**9,862**
NEPA Impact [f]	**6,685**	**0**	**0**	**6,650**

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) GHG emissions for site preparation and building construction were conservatively calculated using URBEMIS2007.

f) The CEQA Impact equals total project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total project construction emissions minus NEPA baseline emissions. The NEPA baseline construction emissions are reported in Table 3.2-12.

Table 3.2-130 summarizes the annual GHG emissions that would occur in California from operation of Alternative 7 with mitigation. The emission sources for which GHG emission were calculated include area sources and mobile sources. The table also shows the net change in the Alternative's GHG emissions relative to both the CEQA and NEPA baselines.

CEQA Impact Determination

Table 3.2-129 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-130 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 7 would produce significant levels of GHG emissions under CEQA.

NEPA Impact Determination

Table 3.2-129 shows that total CO_2e emissions during project construction would exceed NEPA baseline construction emissions. In addition, the data in Table 3.2-130 show that in each future Project year, annual operational CO_2e emissions would increase relative to the NEPA baseline.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 7 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2** through **MM AQ-4** for construction, and **MM AQ-31** for operations.

Residual Impacts

Significant impacts would remain under CEQA.

Table 3.2-130. Annual GHG Emissions Associated with Operations at the Berth 97-109 Terminal – Alternative 7 With Mitigation

Emission Source	Annual Emissions (metric tons/yr) CO_2e
Project Year 2015	
Area Sources	1,062
Mobile Sources	38,901
Total – Project Year 2015	**39,962**
CEQA Baseline Emissions	2,457
Project minus CEQA baseline	**37,505**
NEPA Baseline Emissions	28,295
Project minus NEPA baseline	**11,667**
Project Year 2030	
Area Sources	1,062
Mobile Sources	39,117
Total – Project Year 2030	**40,178**
CEQA Baseline Emissions	2,457
Project minus CEQA baseline	**37,721**
NEPA Baseline Emissions	28,327
Project minus NEPA baseline	**11,851**
Project Year 2045	
Area Sources	1,062
Mobile Sources	39,567
Total – Project Year 2045	**40,629**
CEQA Baseline Emissions	2,457
Project minus CEQA baseline	**38,172**
NEPA Baseline Emissions	28,327
Project minus NEPA baseline	**12,302**

Notes:

a) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table for Alternative 7 were calculated using the latest URBEMIS2007 model, available data, and available assumptions at the time this document was prepared. Future studies might use updated data and assumptions that are not currently available.

3.2.5 Mitigation Monitoring

AQ-1: The Project would result in construction-related emissions that exceed an SCAQMD threshold of significance.	
Mitigation Measure	**MM AQ-1: Harbor Craft used during Construction.** Phase I: All diesel-powered derrick barges used for pile driving shall use emulsified diesel fuel. Phases II and III: All harbor craft used during the construction phase of the project shall be, at a minimum, repowered to meet the cleanest existing marine engine emission standards or U.S. EPA Tier 2. Additionally, where available, harbor craft shall meet the proposed U.S. EPA Tier 3 (which are proposed to be phased-in beginning 2009) or cleaner marine engine emission standards. The above harbor craft measure shall be met unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists: 1. A piece of specialized equipment is unavailable in a controlled form within the state of California, including through a leasing agreement. 2. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available. 3. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease. **MM AQ-2: Cargo Ships** Phases II and III: 1. All cargo ships used for terminal crane deliveries shall comply with the expanded VSRP of 12 knots from 40 nm from Point Fermin to the Precautionary Area. The general cargo ship used to deliver cranes in Phase I is assumed not to have observed the VSRP. **MM AQ-3: Fleet Modernization for On-Road Trucks:** Phases II and III: 1. Trucks hauling materials such as debris or fill shall be fully covered while operating off Port property 2. Idling shall be restricted to a maximum of 5 minutes when not in use 3. USEPA Standards: All on-road heavy-duty diesel trucks with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater used onsite or to transport materials to and from the site shall comply with EPA 2004 on-road PM emission standards and be the cleanest available NO_X (0.10 g/bhp-hr PM_{10} and 2.0 g/bhp-hr NO_X). In addition, all on-road trucks shall be outfitted with the Best Available Control Technology (BACT) devices certified by the California Air Resources Board (CARB). Any emissions control device used by the Contractor shall achieve emissions reductions no less than

what could be achieved by a Level 3 diesel emissions control strategy for a similar sized engine as defined by CARB regulations.

A copy of each unit's certified, USEPA rating, BACT documentation, and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment

The above "USEPA Standards" measures shall be met, unless one of the following circumstances exists and the contractor is able to provide proof that any of these circumstances exists:

1. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement.
2. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available.
3. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

MM AQ-4: Fleet Modernization for Construction Equipment.

Phases II and III:

1. Tier Specifications:
   a. January 1, 2009 to December 31, 2011: All off-road diesel-powered construction equipment greater than 50 hp, except derrick barges and marine vessels, shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with the Best Available Control Technology (BACT) devices certified by the California Air Resources Board (CARB). Any emissions control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similar sized engine as defined by CARB regulations.
   b. Post January 1, 2012: All off-road diesel-powered construction equipment greater than 50 hp, except derrick barges and marine vessels, shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by the California Air Resources Board (CARB). Any emissions control device used by the Contractor shall achieve emissions reductions no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similar sized engine as defined by CARB regulations.

A copy of each unit's certified Tier specification, BACT documentation and each unit's CARB or SCAQMD operating permit, shall be provided at the time of mobilization of each applicable unit of equipment.

The above "Tier Specifications" measures shall be met, unless one of the following circumstances exist and the contractor is able to provide proof that any of these circumstances exists:

	i. A piece of specialized equipment is unavailable in a controlled form within the State of California, including through a leasing agreement. ii. A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available. iii. A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease. 1. Construction equipment shall incorporate, where feasible, emissions savings technology such as hybrid drives and specific fuel economy standards. 2. Idling shall be restricted to a maximum of 5 minutes when not in use. **MM AQ-5:** **Best Management Practices.** Phase II and III: The following types of measures are required on construction equipment (including on-road trucks): 1. Use of diesel oxidation catalysts and catalyzed diesel particulate traps 2. Maintain equipment according to manufacturers' specifications 3. Restrict idling of construction equipment to a maximum of 5 minutes when not in use 4. Install high-pressure fuel injectors on construction equipment vehicles LAHD shall implement a process by which to select additional BMPs to further reduce air emissions during construction. The LAHD shall determine the BMPs once the contractor identifies and secures a final equipment list. **MM AQ-6:** **Additional Fugitive Dust Controls.** The calculation of fugitive dust (PM_{10}) from Project earth-moving activities assumes a 75 percent reduction from uncontrolled levels to simulate rigorous watering of the site and use of other measures (listed below) to ensure Project compliance with SCAQMD Rule 403. The construction contractor shall further reduce fugitive dust emissions to 90 percent from uncontrolled levels. The construction contractor shall designate personnel to monitor the dust control program and to order increased watering, as necessary, to ensure a 90 percent control level. Their duties shall include holiday and weekend periods when work may not be in progress. The following measures, at minimum, must be part of the contractor Rule 403 dust control plan: ■ Active grading sites shall be watered one additional time per day beyond that required by Rule 403. ■ Contractors shall apply approved nontoxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.

	■ Construction contractors shall provide temporary wind fencing around sites being graded or cleared. ■ Trucks hauling dirt, sand, or gravel shall be covered or shall maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code. ■ Construction contractors shall install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site. ■ The grading contractor shall suspend all soil disturbance activities when winds exceed 25 mph or when visible dust plumes emanate from a site; disturbed areas shall be stabilized if construction is delayed. **MM AQ-7:** **General Mitigation Measure.** For any of the above mitigation measures (**MM AQ-1 t**hrough **MM AQ-6**), if a CARB-certified technology becomes available and is shown to be as good as or better in terms of emissions performance than the existing measure, the technology could replace the existing measure pending approval by the Port. **MM AQ-8:** **Special Precautions near Sensitive Sites.** All construction activities located within 1,000 feet of sensitive receptors (defined as schools, playgrounds, day cares, and hospitals), shall notify each of these sites in writing at least 30 days before construction activities begin.
Timing	During specified construction phases.
Methodology	The LAHD shall include **MM AQ-1** through **MM AQ-8** in the contract specifications for construction. LAHD shall monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD.
Residual Impacts	Significant after mitigation for VOC, NO_X, SO_X, and PM_{10}.
AQ-3 **The Project would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance.**	
Mitigation Measure	**SHIPS** **MM AQ-9:** **Alternative Maritime Power (AMP).** China Shipping ships calling at Berths 97-109 must use AMP at the following percentages while hoteling in the Port: ■ January 1 to June 30, 2005: 60 percent of total ship calls (ASJ Requirement) ■ July 1, 2005: 70 percent of total ship calls (ASJ Requirement) ■ January 1, 2010: 90 percent of ship calls ■ January 1, 2011 and thereafter: 100 percent of ship calls **MM AQ-10:** **Vessel Speed Reduction Program.** All ships calling at Berths 97-109 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area in the following implementation schedule: ■ 2009 and thereafter: 100 percent **MM AQ-11:** **Low-Sulfur Fuel.** Ships calling at Berths 97-109 shall use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin (including hoteling for non-AMP ships) at the following annual participation rates:

	■ 2009: 30 percent of auxiliary engines, main engines, and boilers ■ 2010: 50 percent of auxiliary engines, main engines, and boilers ■ 2013 and thereafter: 100 percent of auxiliary engines, main engines, and boilers **MM AQ-12: Slide Valves.** Ships calling at Berths 97-109 shall be equipped with slide valves or equivalent on main engines in the following percentages: ■ 2009: 25 percent ■ 2010: 50 percent ■ 2012: 75 percent ■ 2014 and thereafter: 100 percent **MM AQ-13: Reroute Cleaner Ships**. When scheduling vessels for service to the Port of Los Angeles, Tenant shall ensure that 75 percent of all ship calls to the Berth 97-109 terminal meet IMO MARPOL Annex VI NO_X emissions limits for Category 3 engines**.** **MM AQ-14: New Vessel Builds.** The purchaser shall confer with the ship designer and engine manufacture to determine the feasibility of incorporating all emission reduction technology and/or design options and when ordering new ships bound for the Port of Los Angeles. Such technology shall be designed to reduce criteria pollutant emissions (NO_X, $SO_{X,}$ and PM) and GHG emission (CO, CH_4, O_3 and CFCs). Design considerations and technology shall include, but are not limited to: 1. Selective Catalytic Reduction Technology 2. Exhaust Gas Recirculation 3. In-line fuel emulsification technology 4. Diesel Particulate Filters (DPFs) or exhaust scrubbers 5. Common Rail 6. Low NO_X Burners for Boilers 7. Implement fuel economy standards by vessel class and engine 8. Diesel-electric pod propulsion systems **YARD EQUIPMENT** **MM AQ-15: Yard Tractors at Berth 97-109 Terminal.** ■ All yard tractors operated at the Berth 97-109 terminal shall run on alternative fuel (LPG) beginning September 30, 2004, until December 31, 2014. (ASJ Requirement) ■ Beginning in January 1, 2015, all yard tractors operated at the Berth 97-109 terminal shall be the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM. **MM AQ-16: Yard Equipment at Berth 121-131 Rail Yard.** All **diesel**-powered equipment operated at the Berth 121-131 terminal rail yard that handles containers moving through the Berth 97-109 terminal shall implement the following measures: ■ Beginning January 1, 2009, all equipment purchases shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.0150 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDECS. ■ By the end of 2012, all equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards.

	■ By the end of 2014, all equipment shall meet USEPA Tier 4 non-road engine standards. **MM AQ-17: Yard Equipment at Berth 97-109 Terminal.** ■ September 30, 2004: All diesel-powered toppicks and sidepicks operated at the Berth 97-109 terminal shall run on emulsified diesel fuel plus a DOC *(ASJ Requirement)* ■ January 1, 2009: ❑ All RTGs shall be electric. ❑ All toppicks shall have the cleanest available NO_X alternative fueled engines meeting 0.015 gm/hp-hr for PM. ❑ All equipment purchases other than yard tractors, RTGs, and toppicks shall be either (1) the cleanest available NO_X alternative-fueled engine meeting 0.015 gm/hp-hr for PM or (2) the cleanest available NO_X diesel-fueled engine meeting 0.015 gm/hp-hr for PM. If there are no engines available that meet 0.015 gm/hp-hr for PM, the new engines shall be the cleanest available (either fuel type) and will have the cleanest VDEC. ■ By the end of 2012: all terminal equipment less than 750 hp other than yard tractors, RTGs, and toppicks shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. ■ By the end of 2014: all terminal equipment other than yard tractors, RTGs, and toppicks shall meet USEPA Tier 4 non-road engine standards. **MM AQ-18: Yard Locomotives at Berth 121-131 Rail Yard.** Beginning January 1, 2015, all yard locomotives at the Berth 121-131 Rail Yard that handle containers moving through the Berth 97-109 terminal shall be equipped with a diesel particulate filter (DPF). **TRUCKS** **MM AQ-19: Clean Truck Program.** The tenant shall comply with the Port's Clean Truck Program. Based on participation in the Clean Truck Program, Heavy-duty diesel trucks entering the Berth 97-109 terminal shall meet the USEPA 2007 emission standards for on-road heavy-duty diesel engines (USEPA, 2001a) in the following percentages the following assumptions were made: ■ 2009: 50 percent USEPA 2007 ■ 2010: 70 percent USEPA 2007 ■ 2011: 90 percent USEPA 2007 ■ 2012: 100 percent USEPA 2007 **MM AQ-20: LNG Trucks.** Heavy-duty trucks entering the Berth 97-109 Terminal shall be LNG-fueled in the following percentages. ■ 50 percent in 2012 and 2013 ■ 70 percent in 2014 through 2017 ■ 100 percent in 2018 and thereafter **MM AQ-21: Truck Idling Reduction Measure.** The Berth 97-109 terminal operator shall ensure that truck **idling** is reduced at the terminal. Potential methods to reduce idling include, but are not limited to, the following: (1) operator shall maximize the durations when the main gates are left open, including during off-peak hours, (2) operator shall implement a container tracking and appointment-based truck delivery and pick-up system to minimize truck queuing, and (3) operator shall design gate to exceed truck flow capacity to ensure queuing is minimized**.**

	NEW/ALTERNATIVE TECHNOLOGY The following measures are lease measures that will be included in the lease for Berth 97-109 due to projected future emissions levels. The measures do not meet all of the criteria for CEQA mitigation measures but are considered important lease measures to reduce future emissions. **MM AQ-22:** **Periodic Review of New Technology and Regulations.** The Port shall require the Berth 97-109 tenant to review, in terms of feasibility, any Port-identified or other new emissions-reduction technology, and report to the Port. Such technology feasibility reviews shall take place at the time of the Port's consideration of any lease amendment or facility modification for the Berth 97-109 property. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, the tenant shall work with the Port to implement such technology. Potential technologies that may further reduce emission and/**or** result in cost-savings benefits for the tenant may be identified through future work on the CAAP. Over the course of the lease, the tenant and the Port shall work together to identify potential new technology. Such technology shall be studied for feasibility, in terms of cost, technical and operational feasibility. As partial consideration for the Port agreement to issue the permit to the tenant, the tenant shall implement not less frequently than once every 7 years following the effective date of the permit, new air quality technological advancements, subject to mutual agreement on operational feasibility and cost sharing, which shall not be unreasonably withheld. **MM AQ-23:** **Throughput Tracking.** If the Project exceeds project throughput assumptions/projections anticipated through the years 2010, 2015, 2030, or 2045, staff shall evaluate the effects of this on the emissions sources (ship calls, locomotive activity, backland development, and truck calls) relative to the EIS/EIR. If it is determined that these emissions sources exceed EIS/EIR assumptions, staff would evaluate actual air emissions for comparison with the EIS/EIR and if the criteria pollutant emissions exceed those in the EIS/EIR, then new or additional mitigations would be applied through **MM AQ-22**. **MM AQ-24:** **General Mitigation Measure.** For any of the above mitigation measures (**MM AQ-9** through **MM AQ-21**), if any kind of technology becomes **available** and is shown to be as good or as better in terms of emissions reduction performance than the existing measure, the technology could replace the existing measure pending approval by the Port of Los Angeles. The technology's emissions reductions must be verifiable through USEPA, CARB, or other reputable certification and/or demonstration studies to the satisfaction of the Port.
Timing	During operation for **MM AQ-9** through **MM AQ-23**.
Methodology	The LAHD shall include the mitigation measures in the lease agreements with the tenant.
Responsible Parties	LAHD (for 2007 and LNG trucks, VSRP monitoring, and plan approvals and monitoring) China Shipping (for AMP, Terminal Equipment, Low Sulfur Fuel, VSRP, Slide Valves, and gate operations).
Residual Impacts	Less than significant after mitigation in 2005 for CO and PM_{10}, but significant for VOC, NO_X, and SO_X. Less than significant after mitigation in 2015 for SO_X and PM_{10}, but significant for VOC, CO, and NO_X. Less than significant after mitigation in 2030 for SO_X and PM_{10}, but significant for VOC, CO, and NO_X.

<table>
<tr><th colspan="2">AQ-9
The proposed Project would produce GHG emissions that would exceed CEQA and NEPA baseline levels.</th></tr>
<tr><td>Mitigation Measure</td><td>MM AQ-25: LEED. The main terminal building shall obtain the Leadership in Energy and Environmental Design (LEED) gold certification level. LEED certification is made at one of the following four levels, in ascending order of environmental sustainability: certified, silver, gold, and platinum. The certification level is determined on a point-scoring basis, where various points are given for design features that address the following areas (U.S. Green Building Council, 2005):
■ Sustainable Sites
■ Water Efficiency
■ Energy and Atmosphere
■ Materials and Resources
■ Indoor Environmental Quality
■ Innovation and Design Process
MM AQ-26: Compact Fluorescent Light Bulbs. All interior buildings on the premises shall exclusively use compact fluorescent light bulbs for ambient lighting within all terminal buildings. The tenant shall also maintain and replace any Port supplied compact fluorescent light bulbs.
MM AQ-27: Energy Audit. The tenant shall conduct a third party energy audit every 5 years and install innovative power saving technology where feasible, such as power factor correction systems and lighting power regulators. Such systems help to maximize usable electric current and eliminate wasted electricity, thereby lowering overall electricity use.
MM AQ-28: Solar Panels. The Port shall install solar panels on the main terminal building.
MM AQ-29: Recycling. The tenant shall ensure a minimum of 40 percent of all waste generated in all terminal buildings is recycled by 2012 and 60 percent of all waste generated in all terminal buildings is recycled by 2015. Recycled materials shall include: (a) white and colored paper; (b) post-it notes; (c) magazines; (d) newspaper; (e) file folders; (f) all envelopes including those with plastic windows; (g) all cardboard boxes and cartons; (h) all metal and aluminum cans; (i) glass bottles and jars; and; (j) all plastic bottles
MM AQ-30: Tree Planting. The applicant shall plant shade trees around the main terminal building and the tenant shall maintain all trees through the life of the lease.</td></tr>
<tr><td>Timing</td><td>During construction for MM AQ-25 and MM AQ-26. During operation for MM AQ-25 through MM AQ-30.</td></tr>
<tr><td>Methodology</td><td>The LAHD shall include the mitigation measures in the lease agreements with the tenant.</td></tr>
<tr><td>Responsible Parties</td><td>Tenant (MM AQ-26, MM AQ-27, MM AQ-29 and MM AQ-30) and
Port (MM AQ-25, MM AQ-26, MM AQ-28, and MM AQ-30)</td></tr>
<tr><td>Residual Impacts</td><td>Significant after mitigation.</td></tr>
</table>

AQ-3 (ALTERNATIVE 7 ONLY) **Alternative 7 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance.**	
Mitigation Measure	**MM AQ-31:** Offsite pedestrian facility improvements, such as overpasses and wider sidewalks, and onsite pedestrian facility improvements, such as building access that is physically separated from street and parking lot traffic and walk paths, shall be constructed.
Timing	During construction.
Methodology	The LAHD shall include the mitigation measure in the lease agreement with the tenant.
Responsible Parties	Tenant
Residual Impacts	Significant after mitigation.