Section 3.2
Air Quality and Meteorology

3.2.1 Introduction

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

3.2.2 Environmental Setting

The site of the proposed Project is located near the Harbor District of the City of Los Angeles and the western portions of the City of Long Beach in the southwest coastal area of the South Coast Air Basin (SCAB). The SCAB consists of the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties and all of Orange County. The SCAB covers an area of approximately 15,500 square kilometers (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 SCAB. In addition, the warm temperatures and high solar radiation during the summer months promote the formation of ozone, 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 may result in elevated pollutant concentrations in the SCAB. 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 SCAB 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.

The proposed Project site is located approximately four miles north of the ports of Los Angeles (POLA or the Port) and Long Beach (POLB) in the southern part of the Los Angeles Basin. The dominant terrain features/water bodies that may influence wind patterns in this part of the Los Angeles Basin include the hills of the Palos Verdes Peninsula to the west and southwest, and the San Pedro Bay and shipping channels approximately four miles south of the Project site. Although the area in the immediate vicinity of the Ports, including that covered by the extensive vehicle roadway network, is generally flat, these terrain features/water bodies may result in significant variations in wind patterns over relatively short distances. Areas to the west of the Palos Verdes Hills and within the vicinity of the San Pedro Bay generally exhibit predominant winds from the northwest and from the south or southeast. The consistency of the predominant winds in this area indicates that the Palo Verdes Hills are channeling the winds from the northwest and that the San Pedro Bay and shipping channels influence the winds from the south and southeast. At the southern tip of the Port of Los Angeles, winds appear to be heavily influenced by the San Pedro Bay and predominant winds are from the southwest. This area is characterized by higher wind speeds and less variation in wind direction than patterns further inland (POLA/POLB, 2010).

3.2.2.2 Criteria Pollutants and Air Monitoring

Criteria Pollutants

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

The US Environmental Protection Agency (USEPA) establishes the National Ambient Air Quality Standards (NAAQS). For 1-hour sulfur dioxide (SO_2) and nitrogen dioxide (NO_2,)[1], the 98th percentile (8th highest) daily maximum 1-hour NO_2 concentration averaged over three years and the 99th percentile (4th highest) daily maximum 1-hour SO_2 concentration averaged over three years shall not exceed the 1-hour NO_2 and 1-hour SO_2 NAAQS, respectively. The California Air Resources Board (CARB) establishes the California Ambient Air Quality Standards (CAAQS). California standards for ozone (O_3), carbon monoxide (CO), 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.[2]

Pollutants that have corresponding national or state ambient air quality standards are known as criteria pollutants. These pollutants, when present at sufficiently high levels, may 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 primary concern that are assessed in this EIR include ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. Nitrogen oxides (NOx) and sulfur oxides (SOx) 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. Criteria pollutants have been associated with human health effects at certain air concentrations. Environmental agencies have set standards to prevent health effects from exposure to these chemicals at levels that may lead to adverse health effects. The adverse effects associated with these criteria pollutants above certain concentrations 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 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

[1] The NAAQS for 1-hour NO_2 has not been adopted by the SCAQMD.

[2] California Ambient Air Quality Standards: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

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 by comparing Project-generated emissions of VOC and NOx 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. The SCAQMD levels of significance for 24-hour average concentrations of PM_{10} and $PM_{2.5}$ during operation are both 2.5 $\mu g/m^3$, and the SCAQMD level of significance for annual average PM_{10} concentrations during operation is 1.0 µg/m3. The Port's criterion for triggering the calculation of morbidity and mortality is exceedance of a 24-hour average concentration of $PM_{2.5}$ of 2.5 $\mu g/m^3$ for a project increment (project minus baseline).

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

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 (NO_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 (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] The chemical composition of particulate matter can vary substantially and there is substantial scientific uncertainty and controversy surrounding the importance of chemical composition on the health effects associated with particulate matter. It is not clear that all particulate matter can cause the types of health effects previously listed. (USEPA, 2010)
Suspended Particulate Matter ($PM_{2.5}$)	(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] The chemical composition of particulate matter can vary substantially and there is substantial scientific uncertainty and controversy surrounding the importance of chemical composition on the health effects associated with particulate matter. It is not clear that all particulate matter can cause the types of health effects previously listed. (USEPA, 2010)
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, 2007b).

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 (OEHHA, 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 EIR.

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) While many of the health effects listed in Table 3.2-1 are associated with exposure to the various chemicals listed in the Table, the effects listed are not necessarily caused by exposure to the listed chemicals. (USEPA, 2010) The Ambient Air Quality Standards set by California for the chemicals listed in the Table are intended to prevent the health effects listed in Table 3.2-1. (http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm). The listing of a variety of health effects in the Table does not imply that any or all of the health effects are expected or would be caused by Project-related emissions.

Local Air Monitoring Levels

Air quality within the SCAB has generally improved since the inception of air pollutant monitoring in 1976, and as found in the Port's 2010 CAAP Update, has continued to improve up through 2009. 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 USEPA, CARB and SCAQMD. This trend towards cleaner air has occurred despite continued population growth.

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 SCAB as an "extreme" nonattainment area for 1-hour ozone, a nonattainment area for 8-hour ozone, a nonattainment area for PM_{10}, a nonattainment area for $PM_{2.5}$, and a maintenance area for CO[3]. The SCAB is in attainment of the NAAQS for SO_2, NO_2, and lead (USEPA, 2012). 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 SCAB as an "extreme" nonattainment area for 1-hour ozone and 2008 ozone standards, 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 (CARB, 2011a).

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., using elemental carbon (EC) as a surrogate. The secondary objective of the program is to estimate ambient particulate matter levels within nearby communities due to Port emissions. To achieve these objectives, the program measures ambient concentrations of PM_{10}, $PM_{2.5}$, and EC at four locations in the Port vicinity (POLA, 2011a). In 2008, the Port also began measuring ambient concentrations of ozone, SO_2, NO_2 and CO.

Significant Port-wide emission reductions have been achieved since the Final 2006 CAAP:

- The Port met the 2014 NOx Emission Reduction Standard in 2009 (2010 CAAP Update, p. ES-9).
- The Ports are anticipated to achieve their 2014 and 2023 SOx Emissions Reduction Standards in 2014 (2010 CAAP Update, p. ES-10).
- The Ports are anticipated to achieve their 2014 DPM Emissions Reduction Standard (2010 CAAP Update, p. ES-8).

Thus, the measures being implemented by the Ports and their business partners are successfully achieving the CAAP's 2014 emission reduction goals.

The station locations, which can be viewed in real time at http://caap.airsis.com/, are:

[3] The SCAB has been achieving the federal 1-hour CO air quality standard since 1990, and the federal 8-hour CO standard since 2002. Effective June 11, 2007, the U.S. EPA redesignated SCAB as in attainment for CO. A redesignation to attainment has already been made for the state CO standards.

- **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 Terminal Island site (describe 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.
- **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. 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.
- **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 six years at its Wilmington station and for three years at its coastal boundary station, $PM_{2.5}$ data at all four of its stations for six years, and ozone, SO_2, NO_2 and CO from all four of its stations for three years. Though the Port operates monitoring stations in the vicinity of the proposed Project, three years of complete data from these stations were not available at the time of the analysis and therefore these data are not used in this analysis. 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 2008 to 2010, the most recent complete 3-year period of quality assured data available at the time of the analysis. Per the Port's ambient air pollutant concentration modeling protocol, the most recent complete 3-year period of quality-assured concentration data is needed for use in the analysis of ambient air pollutant concentrations. (POLA, 2011b) 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 and 8-hour standards in 2008 and 2010 and national 8-hour standard in 2010), PM_{10} (state 24-hour standard in 2008 and 2009 and state and annual standards in 2008, 2009, and 2010), and $PM_{2.5}$ (national 24-hour standard in 2008, and state annual standard in 2008 and 2009). No standards were exceeded for CO, NO_2, SO_2, lead, and sulfates.

Pollutant sampling data for the most recent three years (May 2008 through April 2011) from the Port monitoring program are available. 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}, annual average concentrations at the Port Monitoring Sites are lower than the North Long Beach station, and 24-hour average concentrations at the North Long Beach station are lower than at the Port Wilmington Community Site and higher than at the Port Coastal Boundary Site. North Long Beach station concentrations are higher than those at the Port Monitoring Sites for 8-hour average ozone, and 24-hour and annual $PM_{2.5}$. For 1-hour average ozone, concentrations at the North Long Beach station are lower than at the Port Wilmington Community Site and the Port Source-Dominated Site and higher than at the Port Coastal Boundary Site and the Port San Pedro Community Site.

Table 3.2-2. Maximum Pollutant Concentrations Measured at the North Long Beach Monitoring Station -- 2008 through 2010.

Pollutant	Averaging Period	National Standard	State Standard	Highest Monitored Concentration		
				2008	2009	2010
Ozone (ppm)	1 hour[a]	N/A	0.09	0.093	0.089	0.101
	8 hours[b]	0.075	0.070	0.074	0.068	0.084
CO (ppm)	1 hour	35	20	3	3	3
	8 hours	9	9.0	2.6	2.2	2.1
NO_2 (ppm)						
	1 hour	0.100[c]	N/A	0.13	0.07	0.07
	Annual	0.053	0.030	0.0208	0.0212	0.0198
SO_2 (ppm)						
	1 hour	0.075[d]	N/A	0.09	0.02	0.04
	24 hours	N/A	0.04	0.012	0.005	0.006
	Annual	N/A	N/A	0.0022	N/A	N/A
PM_{10} (µg/m^3)	24 hours[e]	150	50	62.0	62.0	44.0
	Annual	N/A	20	29.1	30.5	22.0
$PM_{2.5}$ (µg/m^3)	24 hours[f]	35	N/A	38.9	34.1	28.3
	Annual	15.0	12	14.2	12.8	10.5
Lead (µg/m^3)	30 days	N/A	1.5	0.01	0.01	0.01
	Calendar Quarter	1.5	N/A	0.01	0.01	0.01
	Rolling 3-month average	0.15	N/A	N/A	N/A	N/A
Sulfates (µg/m^3)	24 hours	N/A	25	11.0	13.6	11.8

Note: Exceedances of the standards are highlighted in bold. Although the NAAQS were not exceeded at the North Long Beach Monitoring Station for CO 2008 to 2010, the South Coast Air Basin is classified by USEPA as nonattainment for this pollutant because violations have occurred at other monitoring stations in the Basin.

a) The state 1-hour ozone standard was exceeded on 1 day in 2010.

b) The state 8-hour ozone standard was exceeded on 1 day in 2008 and 1 day in 2010; the national 8-hour ozone standard was exceeded on 1 day in 2010.

c) Final rule was effective April 12, 2010. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb.

d) Final rule signed June 2, 2010 and effective August 23, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

e) The state 24-hour PM_{10} standard was exceeded on 1 day in 2008 and 3 days in 2009. The national PM_{10} standard was not exceeded.

f) The national 24-hour $PM_{2.5}$ standard is based on a 3 year average of the 98th percentile values. It was exceeded on 8 days in 2008. In 2009 and 2010, this average is below the NAAQS.

Source: SCAQMD, 2010 (Southwest Coastal LA County Site 1). The data shown is for the most recent available years: 2008, 2009 and 2010.

µg/m^3 micrograms per cubic meter
ppm parts per million
N/A Not applicable

Table 3.2-3. Maximum Pollutant Concentrations Measured for the Port Air Quality Monitoring Program and North Long Beach Monitoring Site.

Pollutant	Averaging Period	Port of Los Angeles Monitoring Sites May 2008 – April 2011				SCAQMD Monitoring Site 2008-2010
		Wilmington Community Site	Coastal Boundary Site	San Pedro Community Site	Source-Dominated Site	North Long Beach
Ozone (ppm)	1 hour	0.11	0.130	0.081	0.14	0.101
	8 hours	0.087	0.076	0.066	0.062	0.084
CO (ppm)	1 hour	5.3	2.2	5.2	5.1	3
	8 hours	2.8	2.1	2.1	1.6	2.6
NO_2 (ppm)						
	1 hour[a]	0.079	0.064	0.089	0.088	0.13
	Annual	0.023	0.011	0.020	0.022	0.0212
SO_2 (ppm)						
	1 hour[b]	0.030	0.027	0.030	0.047	0.09
	24 hours	0.009	0.015	0.010	0.025	0.012
	Annual[f]	0.003	0.003	0.003	0.0065	0.0022
PM_{10} (µg/m^3)[c, e]	24 hours	74.7	53.6	N/A	N/A	62
	Annual	25.9	24.0	N/A	N/A	30.5
$PM_{2.5}$ (µg/m^3)[c]	24 hours	23.8	29.6	29.2	34.9	38.9
	Annual	9.3	8.9	11.4	11.4	14.2
Lead (µg/m^3)	30 days	N/A	N/A	N/A	N/A	0.01
	Calendar Quarter	N/A	N/A	N/A	N/A	0.01
	Rolling 3-month average	N/A	N/A	N/A	N/A	N/A
Sulfates (µg/m^3)	24 hours	N/A	N/A	N/A	N/A	13.6

Notes:

a) Final rule was effective April 12, 2010. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb.

b) Final rule signed June 2, 2010 and effective August 23, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

c) For PM_{10} (Wilmington Community and Coastal Boundary only) and $PM_{2.5}$, the Port monitoring sites measure a 24-hour sample every 3 days.

d) The Port data were collected between May 2008 and April 2011. Data from the SCAQMD North Long Beach monitoring sites were collected between January 2008 and December 2010.

e) PM_{10} is not measured at the San Pedro Community site or Source-Dominated site.

f) The maximum annual SO_2 concentration only accounts for the period through April 2010 as the annual SO_2 in April 2011 is not available.

Source: POLA, 2011c.

µg/m^3 micrograms per cubic meter

ppm parts per million

N/A Not applicable

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are identified and their toxicity is studied by the Office of Environmental Health Hazard Assessment (OEHHA). TACs are compounds that are known or suspected to cause short-term (acute) and/or long-term (chronic non-carcinogenic or carcinogenic) adverse health effects. Examples of TAC sources within the SCAB include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources.

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 SCAB 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 2008, the SCAQMD released the final 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 30 percent from the analysis in MATES II (SCAQMD, 2008).

Furthermore, a 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, 2006a). These emissions are reported to result in elevated cancer risk levels over the entire 20-mile by 20-mile study area. Since the completion of the study, there have been significant reductions in diesel emissions including those outlined in the CAAP and the Clean Truck Program.

As discussed in Section 1.6.1, the Port, in conjunction with the Port of Long Beach, has developed CAAP that targets all emissions, but is focused primarily on TACs. The Port has also developed the Sustainable Construction Guidelines as discussed in Section 3.2.3.5 to reduce emissions, including TACs, from construction. 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 SCAB, $PM_{2.5}$ 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 NOx, SOx, VOCs, and ammonia (SCAQMD, 2006).

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, 2006).

Ultrafine Particles

Ultrafine particles are addressed by standards for $PM_{2.5}$ and PM_{10}, and are addressed by toxicity factors used for DPM. Research is continuing. UFPs are formed usually during combustion of the fuel, such as when diesel fuel is used. With gasoline and natural gas (liquefied or compressed) fuels, the UFPs are derived mostly from the burning of lubricant oil. UFPs are emitted directly from the tailpipe as solid particles (soot –

elemental carbon and metal oxides) and semi-volatile particles (sulfates and hydrocarbons) that coagulate to form particles.

The research regarding UFPs suggests UFPs might have a disproportionate impact on 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 penetrate deep into the lung. Although the mechanism of transport is not well-established, UFPs have also been shown to rapidly enter the blood stream following inhalation (Nemmar et al. 2001, 2002) and are able to enter individual cells. UFPs may impact pulmonary and cardiac function directly through inflammatory and oxidative reactions (Hiura et al. 1999, Simkhovich et al. 2008). Studies have also suggested that organic chemicals adsorbed on the UFPs surface lead to cellular damage; effects may involve chronic inflammation, oxidative stress, and mitochondrial damage (Li et al. 2003, Xia et al. 2004).Recent studies have found that UFPs may also pose a risk to cardiovascular health, particularly in at-risk individuals, and may be a risk-factor for heart arrhythmias (University of California, Los Angeles [UCLA], 2010).

The University of Southern California (USC), in collaboration with CARB and California Environmental Protection Agency (Cal/EPA), released a study in April 2011 investigating UFP concentrations within communities in Los Angeles, including the port area of San Pedro and Long Beach (USC, 2011). The study found that UFP concentrations vary significantly near the Ports (a major UFP source) and therefore substantiated concerns about the applicability of using centrally-located UFP concentrations for estimating population exposure.

Additional UFP research primarily involves roadway exposure. Studies suggest that over 50 percent of an individual's daily exposure is from driving on highways (Fruin, et al, 2004). Levels appear to drop off rapidly as one moves away from major roadways (Zhu et al, 2002a and 2002b). Little research has been done directly on locomotives and off-road vehicles. Work is being done on filter technology, including filters for locomotives, as part of the technology development of Tier 4 locomotives. The Port began collecting UFP data at its four air quality monitoring stations in late 2007 and early 2008. The Port actively participates in the CARB testing at the Port and will comply with all future regulations regarding UFPs. Finally, measures included in the CAAP aim to reduce all emissions Port-wide.

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, at certain elevated levels, 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 salt water bodies from pollution. Port-related emissions deposit into both local waterways and regional land areas. Emission sources from the proposed Project would produce DPM, which contains trace amounts of toxic chemicals. Through its Clean Air Action Plan, 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, including emissions of NOx, SOx, and DPM.

3.2.2.3 Baseline Emissions

This section discusses the baseline conditions, sources, and activities. The baseline year for determining the significance of potential proposed Project impacts is 2010. The proposed Project site is devoted to warehousing, transloading and grain terminal operations; container and truck maintenance, container fumigation, servicing, and storage; rail service; carbon product manufacturing; and access roads for existing businesses. The baseline analysis considers the following businesses or facilities that currently exist on the Project site:

- ACTA Maintenance Yard
- California Cartage
- Fast Lane Transportation, Inc. ("Fast Lane")
- Flexi-Van
- L.A. Harbor Grain Terminal/Harbor Transload
- San Pedro Forklift
- Three Rivers Trucking
- Total Intermodal

Existing uses and a description of businesses and their operations are summarized in Table 2-1. Information about on-road and off-road equipment, locomotives, facility energy consumption, and worker commute activities during 2010 for each baseline business were obtained directly from individual businesses as part of the term sheets in 2005 for the Draft EIR and verified and adjusted for 2010 as part the Recirculated Draft EIR. In addition, international cargo drayage truck trips between the Port and the BNSF Hobart Yard (Hobart Yard) occurring in 2010 were evaluated as part of the baseline emissions, as a majority of those truck trips would be shifted to the SCIG facility under the proposed Project scenario, as described in Section 2.4. These trips were estimated based on international cargo lift counts at Hobart Yard and assumptions on the number of truck trips generated by these lifts as described in Chapter 3.10. International cargo rail trips from Hobart Yard to the SCAB boundary were also included as part of the baseline emissions, as a majority of those rail trips would be shifted to the SCIG facility under the proposed Project scenario. Emissions within the fenceline of Hobart Yard and other BNSF support facilities including the associated Sheila locomotive maintenance yard are not included in this analysis, as described in Chapter 2. Truck trips generated by the existing businesses (both on-site and off-site totaling approximately 515,000 annual round trips) and truck trips to and from the Hobart Yard (totaling approximately 467,000 annual round trips) were the largest sources of emissions in the baseline. [4] Cargo-handling equipment used at the existing business sites were also a major source of emissions in the baseline. San Pedro Forklift maintains a conditional use permit for

[4] The baseline does not include domestic cargo activities to, from, or within the Hobart Yard, since the proposed Project would redistribute existing and future international port-related cargo from Hobart to the SCIG facility, without any change in the handling of domestic cargo that would occur with or without the SCIG project, as explained in Section 2.1.

fumigation of cargo containers with Methyl Bromide (MeBr). Although MeBr is a recognized air toxic species, insufficient data are available to model the fugitive emissions releases from fumigation events at this location. The conditions of San Pedro Forklift's permit do not include any health risk assessment or dispersion modeling of fumigation events. Without detailed information on specific locations, fugitive release amounts, and configuration of the fumigation event, these MeBr emissions were not quantified in the baseline analysis. By excluding this source in the baseline analysis, the incremental emissions associated with the proposed Project, when subtracted from baseline emissions, yields a more conservative result.

Baseline emissions from land-based sources (trucks, cargo-handling equipment and motor vehicles used for employee commutes) were based on model runs of the CARB EMFAC2011, CARB CHE calculator (CARB, 2007a) and OFFROAD2007 (CARB, 2007b) models. Data input and output from the model runs is provided in Appendix C1. Additional emissions estimates were conducted for rail locomotives calling on the existing business facilities within the project site limited to the general port area only (e.g., California Cartage and L.A. Harbor Grain Terminal), and for specialized cargo-handling equipment using emissions estimation guidance from the USEPA and CARB. The following assumptions were made in calculating baseline emissions from land-based sources:

- Activity of all motor vehicles (truck and employee vehicles), including trip generation rates and travel routes were based on the traffic modeling as described in Section 3.10. Assumptions for on-site activity of motor vehicles were adjusted to 2010 based on information obtained from the existing businesses for 2005 as part of the Draft EIR.
- The fleet mix of trucks calling on Port destinations, including truck trips between existing business facilities and the Ports and truck trips between Hobart Yard and the Ports, were obtained from the Port baseline emission inventory (Starcrest, 2011).
- The fleet mix of vendor trucks calling on the existing business facilities which do not subsequently call on the Port were assumed to be the SCAB default fleet mix from the EMFAC2011 model.
- Assumptions for cargo-handling equipment operating at existing business facilities were scaled to 2010 based on information obtained from the existing businesses for 2005 as part of the Draft EIR.
- Table 3.2-4 summarizes the average daily operational emissions associated with the operation of the existing businesses on the Project site in the baseline year. The average daily emissions represent the annual emissions divided by the annual operating day for each business. The average daily emissions are provided for informational purposes and are not used for significance determination.

Table 3.2-4. CEQA Baseline (2010) Average Daily Operational Emissions.

Source Category	Average Daily Emissions (lb/day) [a, g]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Trucks On-Site [b]	19	56	126	0	7	4
Trucks Off-Site [b, c]	51	235	1,019	2	101	42
Locomotives Off-Site[d]	30	68	775	17	21	19
Employee Commute On-Site	1	10	1	0	1	0
Employee Commute Off-Site	11	231	20	0	39	11
Cargo Handling Equipment (CHE)	28	1,357	232	1	9	8
Existing Business Locomotive Activities [e]	0	0	2	0	0	0
Total –Baseline [f]	**140**	**1,958**	**2,175**	**21**	**178**	**84**

a) Emissions represent annual emissions divided by the annual operating day for each business.
b) Trucks include medium and heavy duty trucks.
c) Off-Site trucks emissions include trips originating from existing business facilities and trips between port terminals and Hobart Yard.
d) Locomotives off-site refer to trips from the Hobart Yard to the SCAB boundary.
e) Existing businesses with locomotive activities are Cal Cartage and L.A. Harbor Grain Terminal.
f) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.
g) 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.

Table 3.2-5 summarizes the baseline peak daily operational emissions. Baseline peak daily emissions are compared to future Project peak daily emissions to determine significance whether the difference between the two would exceed significance criteria consistent with SCAQMD guidance (SCAQMD, 2003). Peak daily emissions represent theoretical upper-bound estimates of activity levels at the Project site and may never occur. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently, if ever, and are based upon a lesser known, and therefore more theoretical, set of conservative assumptions. The peak daily emissions for trucks and cargo handling equipment were obtained by applying a peaking factor to the average daily emissions. The peaking factor was developed as part of the most recent Port baseline traffic study (Meyer, Mohaddes Associates, Inc, 2004), which examined activity levels on an average daily and peak daily basis at numerous Port facilities, and was assumed to be representative of peak day baseline conditions. The factor was developed by comparing the peak hour volume to peak period volume of roadways in the port area based on 24-hour hourly counts by Caltrans. Peak daily emissions were used in the significance determination for Impact AQ-3 consistent with SCAQMD guidance.

Table 3.2-5. CEQA Baseline (2010) Peak Daily Operational Emissions.

Source Category	Peak Daily Emissions (lb/day) [a, g]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Trucks On-Site [b]	22	63	141	0	8	4
Trucks Off-Site [b, c]	57	264	1,141	3	113	47
Locomotives Off-Site[d]	35	93	894	17	21	20
Employee Commute On-Site	1	10	1	0	1	0
Employee Commute Off-Site	11	231	20	0	39	11
Cargo Handling Equipment (CHE)	31	1,519	260	1	10	9
Existing Business Locomotive Activities [e]	0	0	2	0	0	0
Total –Baseline [f]	**157**	**2,180**	**2,458**	**21**	**192**	**91**

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely, if ever, occur during day-to-day terminal operations.
b) Trucks include medium and heavy duty trucks.
c) Off-Site trucks emissions include trips originating from existing business facilities and trips between Port terminals and Hobart Yard.
d) Locomotives off-site refer to trips from the Hobart Yard to the SCAB boundary.
e) Existing businesses with locomotive activities are Cal Cartage and L.A. Harbor Grain Terminal.
f) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.
g) 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.

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 and retirement homes, and hospitals. Sensitive receptors that could be affected by the construction or operation of the proposed Project are shown in Figure 3.2-1. A list of sensitive receptors is provided in Table 3.2-6. A detailed discussion of the selection of sensitive receptors is provided in Appendix C3. The nearest sensitive receptors to the proposed Project site include residents in the West Side neighborhood of Long Beach. Additionally, the Bethune School and the Hudson K-8 (elementary and middle school) are 425 and 630 feet, respectively, from the eastern boundary of the proposed Project site. The nearest daycare center is the Cabrillo Child Development Center, about 460 feet from the eastern boundary of the proposed Project site. The nearest convalescent homes are Hayes Homes and Pioneer Homes of California, located about 1,330 feet east of the Project boundary and 1,380 feet northeast of the Project boundary, respectively. The nearest healthcare facilities are the VA Long Beach Clinic and Veteran's Support Services, approximately 1,030 feet east of the Project boundary, and the Westside Neighborhood Clinic, approximately 2,600 feet east of the proposed Project site.

Figure 3.2-1. Locations of Sensitive Receptors in the Vicinity of the Proposed Project Site.

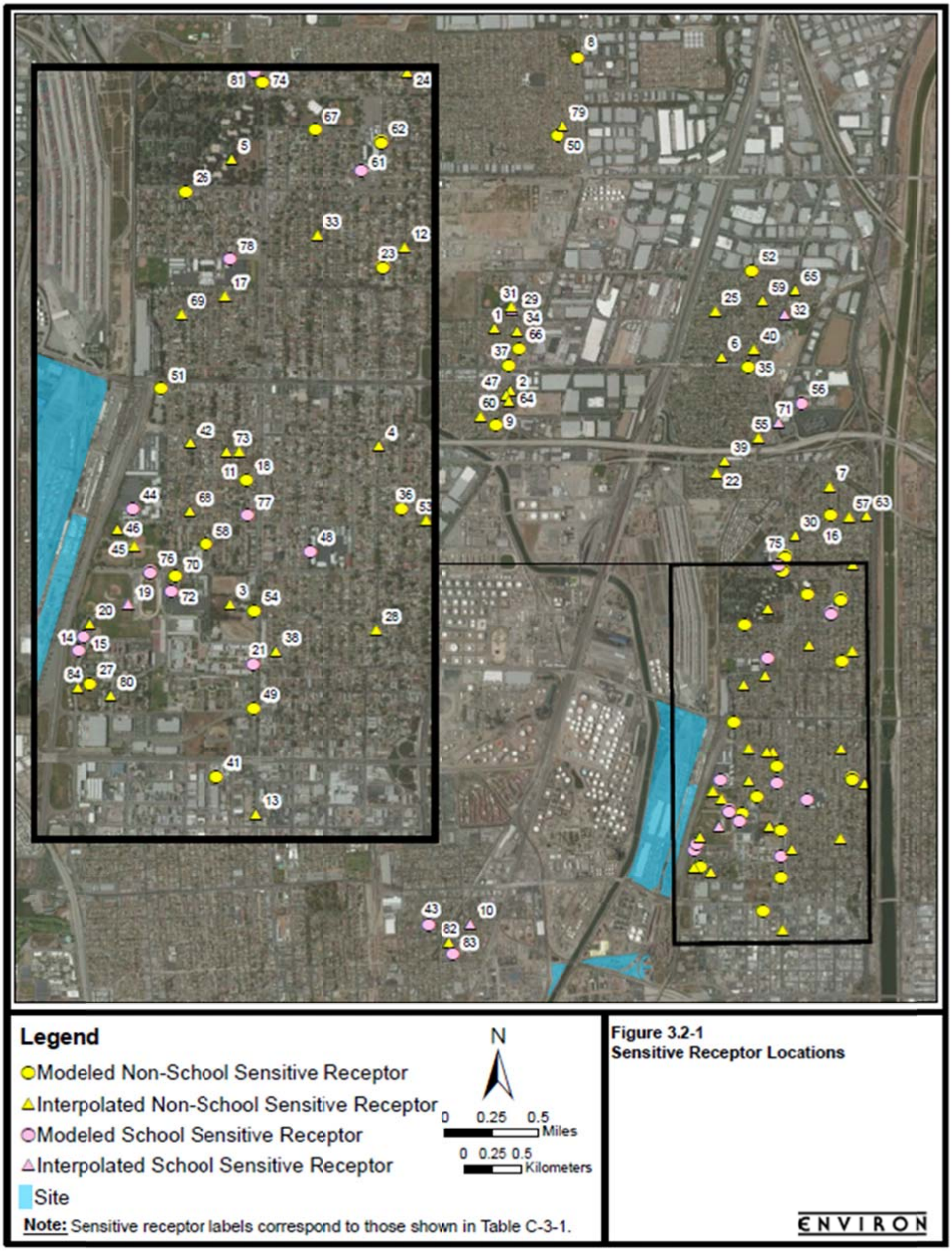

Table 3.2-6. List of Sensitive Receptors.

Label	Name
1	A & P Guest Home
2	Acosta Family Home II
3	Admiral Kidd Park
4	Agu Family Child Care
5	American Gold Star Manor Healthcare
6	Am's Residential Facility 3
7	Am's Residential Facility-2
8	Anderson Park
9	Angels Hangout/Saldana Family Child Care
10	Apostolic Faith Center/Apostolic Faith Academy
11	Aquarius Home
12	Babineaux Family Child Care
13	Bay Breeze Care
14	Bethune School Recreational Facilities
15	Bethune School/Program for the Homeless
16	Bobo Family Daycare
17	Brown Family Child Care
18	Burnett home Care - Aged People Care
19	Cabrillo High Recreational Facilities
20	Cabrillo Child Development Center - Child Care
21	Cabrillo High School
22	Cameron Home
23	Carol Daycare
24	Casian Family Child Care
25	Cecilia Olivas
26	Ceja Family Child Care
27	Century Villages at Cabrillo Homeless Housing Community
28	Costa Family Child Care
29	Del Amo Elementary School
30	Delgado Family Child Care
31	Dolphin Park
32	Dominguez Elementary School
33	Duran, Ramona Family Day Care
34	Fernandez Guest Home
35	First Baptist Preschool and Daycare
36	Franklin Day Care Center
37	Friendship Children
38	Gallegos Family Child Care
39	Garcia Family Child Care
40	Good Beginnings Head Start
41	Harbor Japanese Community Cultural Center
42	Hayes Home
43	Holy Family School and Pre-School
44	Hudson K-8 School
45	Hudson Park
46	Hudson Park Community Garden
47	Jackson Family Child Care
48	James Garfield Elementary School/Child Development Center and Head Start
49	Job Corp Head Start - Daycare and Nursery
50	Just Being Cute (It Takes A Village Family Day Care)
51	Khemara Buddhikaram Cambodian Buddhist Temple
52	Lakeshore Kids & Company 2695 E Dominguez St

Label	Name
53	Lara Family Day Care
54	LBUSD Child Development Center/Westside Neighborhood Clinic
55	Little Greenwood Daycare
56	Long Beach Unified School District: Gifted & Talented Education
57	Lopez Family Child Care
58	Loram Manor
59	Martin-Luna Family Child Care
60	Merced's Family Home
61	Muir Academy
62	Muir Child Development Center
63	Nero-Morrison Family Child Care
64	Nevarez Family Child Care
65	New Life Homes
66	Pablo Residential Care Home
67	Park Silverado Community Center
68	Patterson Family Child Care
69	Pioneer Homes Of California
70	Pramuan Simsriwatna Place of Worship
71	Rancho Dominguez Preparatory
72	Reid Continuation High School
73	Reliable Residential Care
74	Sanders Teeny Tiny Preschool
75	Santa Fe Convalescent Hospital
76	Savannah Academy
77	St. Lucy Church and School
78	Stephens Middle School
79	Stevens Adult Home
80	VA Long Beach Clinic and Veteran's Support Services
81	Webster Elementary School and Head Start
82	Wilmington Park Children's Center (Early Education Center)
83	Wilmington Park Elementary School/Mahar House
84	Cabrillo Center Expansion

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 SCAB, the local air agency is the SCAQMD.

3.2.3.1 Federal Regulations

State Implementation Plan

In federal nonattainment areas, the Federal Clean Air Act (CAA) requires preparation of a State Implementation Plan (SIP), detailing how the State will attain the NAAQS within mandated timeframes. As part of this requirement, the SCAQMD and the Southern California Association of Governments (SCAG) jointly developed the *2007 Air Quality Management Plan (AQMP)*. The 2007 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP builds upon the approaches taken in the 2003 AQMP for the SCAB for the attainment of NAAQS. The SCAQMD and SCAG, in cooperation with the CARB and USEPA, developed the 2007 AQMP for purposes of demonstrating 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, 2007a). Additionally, the plan highlights the significant amount of reductions necessary and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet federal criteria pollutant standards within the timeframes allowed under the federal Clean Air Act (SCAQMD, 2007b). Since it will be more difficult to achieve the 8-hour ozone NAAQS compared to the one-hour NAAQS, the 2007 AQMP contains substantially more emission reduction measures compared to the 2003 AQMP. The SCAQMD released the *Draft Program Environmental Impact Report* for the 2007 AQMP in March 2007 (SCAQMD, 2007a). The 2007 AQMP was submitted to CARB and CARB submitted the state-wide and South Coast SIP to USEPA for approval in September 2007. The US EPA approved the majority of the submitted SIP in March 2012. The 2012 AQMP is under development and is expected to be submitted to the USEPA in by the end of 2012.

Emission Standards for Nonroad Diesel Engines

To reduce emissions from off-road diesel equipment, USEPA established a series of cleaner 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 were phased in from 2001 to 2006. Tier 3 standards were phased in from 2006 to 2008. Tier 4 standards, which generally require add-on emission control equipment to attain them, are being phased in from 2008 to 2015. These standards apply to construction and cargo-handling equipment, but not locomotives (USEPA, 2007).

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.

The standards have been adopted by the USEPA in two regulatory actions. In December 17, 1997, the USEPA adopted the first emissions regulation for railroad locomotives, requiring locomotive engines manufactured or remanufactured from 1973 to 2001 to meet Tier 0 standards, 2002 to 2004 to meet Tier 1 standards, and 2005 and later to meet Tier 2 standards (USEPA, 1997). Subsequently, on March 14, 2008, the USEPA adopted more stringent emissions regulation for railroad locomotives (USEPA, 2008). The regulation sets new emission standards for newly-built and remanufactured locomotive engines. The standards for newly-built locomotive engines are implemented in two tiers: Tier 3 standards take effect in 2011 and 2012 and Tier 4 standards take effect in 2015. The regulation also sets new emissions standards for remanufactured Tiers 0, 1 and 2 locomotive engines, phasing in from 2008 to 2010.

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 NOx and nonmethane hydrocarbon (NMHC) standards of 0.20 g/hp-hr and 0.14 g/hp-hr, respectively, were phased in together between 2007 and 2010 on a percent of sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.

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 switching locomotives, construction equipment, and cargo-handling equipment. Under this rule, the diesel fuel used by line-haul locomotives was limited to 500 ppm starting June 1, 2007; and was further limited to 15 ppm starting January 1, 2012 (USEPA, 2004).

Highway Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for on-road diesel fuel to 15 ppm starting June 1, 2006 (USEPA, 2001).

3.2.3.2 State Regulations, Agreements and Plans

California Clean Air Act

The California Clean Air Act of 1988, as amended in 1992 (CCAA), 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.

Assembly Bill (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 legislation (AB 1971) was passed in September 2004 that 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

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. (CARB, 2006b)

1998 Fleet Average Emissions MOU

CARB, Class I freight railroads operating in the SCAB (BNSF and Union Pacific Railroad [UPRR]), and USEPA signed a Memorandum of Understanding (MOU) in July 1998. The goal of the MOU was a fleet average in the SCAB equivalent to USEPA's Tier 2 locomotive standard for NOx by 2010. The railroads accomplished a locomotive Tier 2 fleet-wide average requirement, in which each railroad must demonstrate that it has not exceeded its Fleet Average Target for the preceding year, beginning in 2010. Under the MOU, early reductions are bankable and the two railroads are making use of this feature by building up emissions credits toward the 2010 fleet-wide average. Because of the banking and credit provisions of the MOU, there is no guarantee that the railroads will operate all locomotives meeting the Tier 2 emission standard. BNSF is meeting fleet average agreement with little or no use of credits. The MOU addressed NOx emissions from locomotives. Under the MOU, NOx emissions from locomotives will be reduced by 67 percent.

2005 CARB/Railroad Statewide Agreement

On June 30, 2005, the CARB entered into a pollution reduction agreement with Union Pacific Railroad (UP) and BNSF Railway (BNSF) (CARB, 2005a). The railroads committed to implementing numerous actions to reduce pollutant emissions from rail operations throughout the state. In addition, the railroads prepared designated railyard emissions inventories that CARB used for CARB railyard-specific health risk assessments for diesel particulate matter. When fully implemented, the agreement is expected to achieve a 20 percent reduction in locomotive diesel particulate matter emissions near railyards. To do this, BNSF has:

- Phased-out non-essential idling and installed idling reduction devices on California based locomotives, resulting in a reduction in idling by a larger class of locomotives than what is required by regulation, earlier than required by regulation.
- Identified and expeditiously repaired locomotives with excessive smoke and ensured that at least 99 percent of the locomotives operating in California passed smoke inspections.
- Maximized the use of ultra-low sulfur (15 parts per million) diesel fuel by January 1, 2007, for locomotives fueled in California, six years before such fuel is required by regulation.

- BNSF has implemented a system-wide Opacity Management Plan which identifies black smoke from locomotives and schedules these locomotives for repairs.

The Southern California Major Class I railyards covered in the agreement include BNSF's Hobart, Watson, San Bernardino, Commerce Eastern and Sheila Street yards. As required by the Agreement, BNSF has submitted an Idling, Visible Emission Reduction Plan (CARB, 2005b), Review of Impacts of Air Emissions, and Assessment of Toxic Air Contaminants, among other elements, for the designated yards. CARB inspects the railyards, including Hobart, yearly for compliance (CARB, 2010a).

California Diesel Fuel Regulations

With this rule, the CARB sets 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, 2005c). 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 beginning 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 for on-road vehicles to 15 ppm beginning October 15, 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, 2006c). 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. The Goods Movement Plan includes discussion of Hobart and ICTF facilities.

In December 2006, CARB approved the "Regulation for Mobile Cargo Handling Equipment (CHE) at Ports and Intermodal Rail Yards" (Title 13, CCR, Section 2479) as amended in 2009 (CARB, 2009a), which is designed to use best available control technology (BACT) to reduce diesel PM and NOx 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.

California Drayage Truck Regulation

CARB adopted a drayage truck regulation effective December 2009 to reduce emissions from diesel particular matter, NOx, and other air contaminants from all on-road class 7 and class 8 diesel-fueled trucks that transport cargo to and from California's ports and intermodal rail yards. The regulation requires owners to register their trucks in the Drayage Truck Registry (DTR) and to comply with emissions standards by a phase-in schedule. By January 1, 2023, this regulation will sunset and all vehicles need to comply with the CARB Statewide Truck and Bus Rule, which requires all drayage trucks and other regulated vehicles in this category to have 2010 model year engines or equivalent. (CARB, 2009b)

Statewide Portable Equipment Registration Program (PERP)

The PERP establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB, 2005d). 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 the proposed Project back-up electricity generator.

CARB Portable Diesel-Fueled Engines Air Toxic Control Measure

Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel shall comply with this regulation and meet weighted fleet average PM emission standards. The first fleet standard compliance date is in 2013. (CARB, 2011b)

CARB In-Use Off-Road Diesel Vehicle Rule

In late July 2007 CARB adopted a rule that requires owners of off-road mobile equipment powered by diesel engines 25 hp or larger to meet the fleet average or best available control technology (BACT) requirements for NOx and PM emissions by March 1 of each year (CARB, 2007c). The rule is structured by fleet size: large, medium and small. Medium sized fleets receive deferred compliance, and small fleets are exempt from NOx requirements and also get deferred compliance.

The original Regulation for In-Use Off-Road Diesel Vehicles was adopted in April 2008. CARB subsequently amended the regulation to delay the turnover of Tier 1 equipment for meeting the NOx performance requirements of the regulation, and then to delay overall implementation of the equipment turnover compliance schedule in response to the economic downturn in 2008 and 2009. For purposes of this analysis the regulation was applied to construction activities beginning in 2013.

CARB Surplus Off-Road Opt-In for NOx

The Surplus Off-Road Opt-In for NOx (SOON) Program was originally adopted with the statewide Regulation for In-Use Off-Road Diesel Vehicles (Off-Road Rule) in 2008 and would apply to districts whose governing board elected to opt into the provision of the program. The SOON Program requires applicable fleets to meet a more stringent fleet-average NOx target than the statewide Off-Road Rule on a compliance schedule. The SCAQMD has opted into the SOON program and requires off-road equipment fleets to meet certain emissions Tier levels for NOx reduction. (CARB, 2011c)

CARB Statewide Truck and Bus Regulation

In December 2008, CARB adopted the Statewide Truck and Bus Regulation that requires installation of PM retrofits on all on-road heavy duty trucks and buses beginning January 1, 2012 and replacement of older trucks starting January 1, 2015. By January 1, 2023, all vehicles need to have 2010 model year engines or equivalent. (CARB, 2011d)

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 SCAB (SCAQMD, 2007b). The most pertinent SCAQMD rules to the proposed Project and alternatives are listed below. The major emission sources associated with the proposed Project are considered mobile sources. Therefore, they are not subject to the SCAQMD rules that apply to stationary sources. Some minor sources such as the on-site emergency generator, would be potentially subject to 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.

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 Switch Locomotive Modernization. Pacific Harbor Line (PHL) entered into an agreement with the Ports of Los Angeles and Long Beach to replace their switch locomotive engines with cleaner engines that meet the Tier 2 locomotive standards or using alternative fuels. The replacement occurred in 2006 and 2007, per CAAP measure RL-1. (POLA and POLB, 2010)

POLA Clean Truck Program. This program bans all model year pre-1989 trucks from the Port starting October 1, 2008. As of January 1, 2010, all model year 1989-1993 trucks were banned from operating at the Port in addition to model year 1994-2003 trucks that are not retrofitted with a Level 3 verified diesel emission control (VDEC) system. As of January 1, 2012, only 2007 model year or newer trucks are allowed to operate at the Port. (POLA, 2007)

3.2.3.4 San Pedro Bay Ports Clean Air Action Plan (CAAP)

The Ports of Los Angeles and Long Beach, with the participation and cooperation of the staff of the USEPA, CARB, SCAQMD, developed the San Pedro Bay Ports Clean Air Action Plan (CAAP), a planning and policy document that sets goals and implementation strategies to reduce air emissions and health risks associated with port operations while allowing port development to continue. In addition, the CAAP sought the reduction of criteria pollutant emissions to the levels that assure port-related sources decrease their "fair share" of regional emissions to enable the Basin to attain state and federal ambient air quality standards. Each individual CAAP measure is a proposed strategy for achieving these emissions reduction goals. The Ports approved the first CAAP in November, 2006. Specific strategies to significantly reduce the health risks posed by air pollution from port-related sources include:

- Aggressive milestones with measurable goals for air quality improvements
- Specific goals set forth as standards for individual source categories to act as a guide for decision-making
- Recommendations to eliminate emissions of ultrafine particulates

- Technology advancement programs to reduce greenhouse gases
- Public participation processes with environmental organizations and the business communities

The CAAP focuses primarily on reducing DPM, along with NOx and SOx. This reduces emissions and health risk and thereby allows for future port growth while progressively controlling the impacts associated with growth. The CAAP includes emission control measures as proposed strategies that are designed to further these goals expressed as Source-Specific Performance Standards which may be implemented through the environmental review process, or could be included in new leases or Port-wide tariffs, MOU, voluntary action, grants or incentive programs.

The CAAP Update, adopted in November, 2010 includes updated and new emission control measures as proposed strategies that support the goals expressed as Source-Specific Performance Standards and the Project-Specific Standards (POLA and POLB, 2010). In addition, the CAAP Update introduces the San Pedro Bay Standards, which establish emission and health risk reduction goals to assist the ports in their planning for adopting and implementing strategies to significantly reduce the effects of cumulative port-related operations.

The goals set forth as the San Pedro Bay Standards are the most significant addition to the CAAP and include both a Bay-wide health risk reduction standard and a Bay-wide mass emission reduction standard. Ongoing Port-wide CAAP progress and effectiveness will be measured against these Bay-wide Standards which consist of the following reductions as compared to 2005 emissions levels:

- Health Risk Reduction Standard: 85 percent reduction in DPM by 2020
- Emission Reduction Standards:
  - By 2014, reduce emissions by 72 percent for DPM, 22 percent for NOx, and 93 percent for SOx
  - By 2023, reduce emissions by 77 percent for DPM, 59 percent for NOx, and 92 percent for SOx

The Project-Specific Standard remains as adopted in the original CAAP in 2006, that new projects meet the 10 in 1,000,000 excess residential cancer risk threshold, as determined by health risk assessments conducted subject to CEQA statutes, regulations and guidelines, and implemented through required CEQA mitigations and/or lease negotiations. Although each Port has adopted the Project Specific Standard as a policy, the Boards of Harbor Commissioners retain the discretion to consider and approve projects that exceed this threshold if the Board deems it necessary by adoption of a statement of overriding considerations at the time of project approval.

The goals set forth as the Source-Specific Performance Standards of the CAAP address a variety of port-related emission sources – ships, trucks, trains, cargo-handling equipment and harbor craft – and outline specific strategies to reduce emissions from each source category. The Source-Specific Performance Standards have been updated as detailed in Section 2 of the CAAP Update and the applicable emission control measures (as detailed in Section 4 of the CAAP Update) for the proposed Project are discussed in Section 1.6.1.

While the Port has adopted a general policy that its leases shall be compliant with the goals of the CAAP, the Board of Harbor Commissioners has discretion regarding the form of all lease provisions and CAAP measures at the time of lease approval. In addition, all businesses must comply with all applicable federal, state, and local air quality regulations.

As the CAAP is a planning document that sets goals and implementation strategies to guide future actions, it does not constrain the discretion of the Ports' Boards of Harbor Commissioners as to any specific future action. Each individual CAAP measure is a proposed strategy for achieving necessary emission reductions. The Board of Harbor Commissioners uses its discretion in its approvals of projects, leases, tariffs, contracts, or other implementing activities in order to appropriately apply the CAAP to the particular situation. Project features or 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 (Table 3.2.27). Project features and mitigations also would extend beyond the five year CAAP time-frame to the end of the lease period 2066.

3.2.3.5 LAHD Sustainable Construction Guidelines

In February 2008, the LAHD Board of Harbor Commissioners adopted the Los Angeles Harbor Department Sustainable Construction Guidelines for Reducing Air Emissions (LAHD Construction Guidelines). These guidelines, updated in November 2009, will be used to establish air emission criteria for inclusion in construction bid specifications. The LAHD Construction Guidelines reinforce and require sustainability measures during performance of the contracts, balancing the need to protect the environment, be socially responsible, and provide for the economic development of the Port. Future Board resolutions will expand the guidelines to cover other aspects of construction, as well as planning and design. These guidelines support the forthcoming Port Sustainability Program. The intent of the LAHD Construction Guidelines is to facilitate the integration of sustainable concepts and practices into all capital projects at the Port and to phase in the implementation of these procedures in a practical yet aggressive manner. Significant features of the LAHD Construction Guidelines include, but are not limited to:

- All ships and barges used primarily to deliver construction-related materials for LAHD construction contracts will comply with the Vessel Speed Reduction Program and use low-sulfur fuel within 40 nautical miles of Point Fermin.
- Harbor craft will meet EPA Tier 2 engine emission standards. This requirement will increase to EPA Tier 3 engine emission standards by January 1, 2011.
- All dredging equipment will be electric.
- Onroad heavy-duty trucks will comply with EPA 2004 onroad emission standards for PM_{10} and NOx and will be equipped with a CARB-verified Level 3 device. Emission standards will increase to EPA 2007 onroad emission standards for PM_{10} and NOx by January 1, 2012.
- Construction equipment (excluding onroad trucks, derrick barges, and harbor craft) will meet EPA Tier-2 nonroad standards. The requirement will increase to Tier 3 by January 1, 2012, and Tier 4 by January 1, 2015. In addition, construction equipment will be retrofitted with a CARB-certified Level 3 diesel emissions control device.
- Comply with SCAQMD Rule 403 regarding fugitive dust and other fugitive dust control measures.
- Additional best management practices, based largely on best available control technology (BACT), will be required on construction equipment (including onroad trucks) to further reduce air emissions.

This EIR analysis assumes that the proposed Project would adopt all applicable Sustainable Construction Guidelines as mitigations. These measures are incorporated into the emission calculations for the mitigated proposed Project. Table 3.2-39 identifies the mitigation and monitoring requirements for these measures.

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. Mitigation measures are provided where feasible for impacts found to be significant.

3.2.4.1 Methodology

Air pollutant emissions of VOC, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$ were estimated for construction and operation of the proposed Project. 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 C1.

Dispersion modeling of CO, NOx, PM_{10}, and $PM_{2.5}$ emissions was performed to estimate maximum offsite pollutant concentrations in the air from emission sources attributed to the proposed Project. The predicted ambient concentrations associated with construction and operation of the proposed Project were compared to **Significance Criteria AQ-2 and AQ-4**, respectively. The complete dispersion modeling report is presented in Appendix C2.

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.** Dispersion modeling was performed using CAL3QHC. The input parameters include meteorological conditions of 0.5 meters per second (m/s) wind speed, stability class F, 5-degree variation of wind direction, 1,000 meter mixed height, 0 cm/sec settling and deposition velocity, and 100 cm surface roughness length (urban land-use). Emission factors were derived using EMFAC2011 v2.3 for link speeds of 27 mph for all movements except the southbound approach/northbound departure, which used 25 mph in 2016, 2046, and 2066. Idle emission factors for vehicle classifications not derived in the EFMAC model were calculated by multiplying the emission factor for 3 mph times three. Cumulative idle rates used in the modeling represent weighted-average emission rates based on vehicle classification and corresponding percent vehicle-mile-travelled (VMT) travel fractions. Model receptors were placed 3 meters (10 feet) from the roadway edge, outside the mixing zone, at setback distances of approximately 25, 50, and 100 feet from the intersection corners along each road link and at 1.8 meters in height. 1-hour concentrations include a background concentration of 5.1 ppm for 2016, 2046, and 2066 (SCAQMD, 2005). 8-hour concentrations include a background concentration of 3.9 ppm for 2016, 2046, and 2066. A persistence factor of 0.77 was used to estimate 8-hour concentrations from model-calculated 1-hour concentrations, with this factor derived from the ratio (8-hour/1-hour) of future background values. The input data and CAL3QHC output files for the CO intersection analysis are presented in Appendix C4.

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

The analysis of impacts is based on a comparison of the proposed Project to the baseline existing conditions. This is consistent with CEQA Guidelines §15125a which states that the environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. Section 15125(a) also provides that the conditions are normally described as they exist at the time the notice of preparation (NOP) is published, which in the case of the proposed Project was 2005. However, the LAHD as lead agency, has determined that with the passage of seven years since the NOP date and changes in conditions over this period, the existing environmental setting is best reflected by a 2010 baseline year, which was the most recent year for which the lead agency had complete data. This approach was confirmed in *Sunnyvale West Neighborhood Association v. City of Sunnyvale* (2010) 190 Cal. App. 4th 1351 (*Sunnyvale West*). Other recent cases, including *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* 204 Cal. App. 4th 1480 (2012) (*Neighbors for Smart Rail*),[5] have validated different approaches, including a future or floating baseline when appropriate. Using existing conditions as the baseline is appropriate for the proposed Project air quality analysis because, in part, the analysis is based on comparison of the baseline with construction emissions and with operational emissions at several discrete points in time for specific analysis years. Future baseline conditions are only considered for the health risk assessment of the proposed Project because the analysis measures exposure of populations over 70 years. As such, impacts for health risk are compared to a floating or future baseline, as described further in section 3.2.4.3. For the air quality emissions analysis, only rules and regulations in place in 2010 are considered in the baseline for the source categories listed. These include on-road vehicle and off-road equipment emissions standards at the federal and state levels.

A health risk assessment (HRA) of toxic air contaminant emissions associated with construction and operation of the proposed Project was conducted in accordance with a Project-specific Protocol prepared by the Port and reviewed by SCAQMD (POLA, 2008); the *Sunnyvale West* decision and a subsequent decision, *Pfeiffer v. City of Sunnyvale City Council*, 200 Cal.App.4th 1522 *(Pfeiffer)* and *Neighbors for Smart Rail*; and Port protocols and procedures for conducting HRA's (POLA, 2008). Maximum predicted health risk values in the communities near the proposed Project site were compared to **Significance Criterion AQ-7**. The HRA analyzed Project emissions and human exposure to the emissions during the 70-year period from 2013 to 2082. The HRA includes an evaluation of three different types of health effects: individual lifetime cancer risk, chronic noncancer hazard index (HI), and acute noncancer HI. **Impact AQ-7** also contains a discussion of the effects of PM on premature death (mortality) and disease (morbidity). This discussion is included to provide information on the association of DPM and ambient PM exposure with adverse health effects – a topic of increasing concern to citizens, regulatory agencies, and other entities. These health effects can include an increased incidence of premature mortality and both cardiovascular and respiratory diseases. POLA has developed a methodology to evaluate potential mortality and morbidity from project-related PM; that methodology is summarized in Impact AQ-7 and provided in its entirety in Appendix C3. Evaluation of PM-attributable mortality and morbidity is not required under CEQA, and no significance thresholds exist to support interpretation of the calculated outcomes. Consequently, this analysis is provided for informational purposes only. The complete HRA Report is presented in Appendix C3.

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[5] At the time of the preparation of this Recirculated Draft EIR, the Supreme Court announced that it would review the *Neighbors for Smart Rail* case. The Supreme Court has not issued a decision.

The consistency of the proposed Project with applicable air quality plans was addressed in accordance with **Significance Criterion AQ-8.**

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 readily available data, assumptions, and emission factors at the time of this analysis.

Understanding Reported Results

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, locomotives for delivery of bulk materials, and general cargo ships for crane delivery. Because these sources would primarily use diesel fuel, they would generate emissions of diesel exhaust in the form of VOC, CO, NOx SOx, PM_{10} and $PM_{2.5}$. In addition, off-road and on-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 Project construction activities were provided by the applicant's project design engineers, or were developed in consultation with LAHD staff and in consideration of environmental reviews of previously proposed construction projects.

This analysis considers all construction activity associated with the proposed Project site during the years of construction as described in Section 2.4.3, organized into the major elements listed:

- SCIG construction (2013-2015)
    - Railyard site construction
    - Lead and storage tracks
    - Dominguez Channel bridge widening
    - Sepulveda Bridge reconstruction
    - Sepulveda Blvd underpass and SCE tower relocation
    - Pacific Coast Highway (PCH) grade separation
- Construction at Alternate Sites for Businesses (2013)
    - California Cartage 10-acre site
    - ACTA Maintenance Yard site west of Dominguez Channel

- o Fast Lane 4.5-acre site

Activities within each element are organized by their duration (in months) and their scheduled start and completion dates, with overlaps of activities considered.

To estimate peak daily construction emissions for comparison to SCAQMD emission thresholds, emissions were first calculated for individual construction activities and then emissions were summed where multiple construction activities overlapped in time, as indicated in the proposed construction schedule (Table 2-2). The activity overlappings also include those of alternate sites for businesses. 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 C1.

LAHD Sustainable Construction Guideline measures are included as mitigation in this EIR consistent with the Guidelines.

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

Off-Road Construction Equipment	On-Road Trucks	Trains	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. **CARB In-Use Off-Road Diesel Vehicle Rule** – Off-road mobile equipment powered by diesel engines 25 hp or larger must meet the fleet average or best available control technology (BACT) requirements for NOx and PM emissions by March 1 of each year. **CARB Portable Diesel-Fueled Engines Air Toxic Control Measure (ATCM)** Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel shall meet weighted	**Emission Standards for Onroad Trucks** – Engine emission standards gradually phased in 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. **Port of Los Angeles Clean Truck Program** - Heavy-duty diesel drayage trucks calling on Port terminals shall meet the USEPA 2007 emission standards for on-road heavy-duty diesel engines (USEPA, 2001) by 2012. **CARB Statewide Truck and Bus Regulation** Installation of PM retrofits on all heavy duty trucks beginning January 1, 2012 and replacement of older trucks starting January 1, 2015. By January 1, 2023, all vehicles	**Emission Standards for Locomotives** – Tiered engine emission standards gradually phased in due to normal locomotive fleet turnover. **1998 Fleet Average Agreement** Fleet average emission factors for NOx for linehaul locomotives operating in the South Coast area. **2005 CARB/Railroad Statewide Agreement** – Reduced line haul locomotive idling times assumed to take effect starting in 2006. **Nonroad Diesel Fuel Rule** – 500-ppm sulfur starting June 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,	**SCAQMD Rule 403 Compliance** – 69 percent reduction in fugitive dust emissions due to daily watering of construction site.

Off-Road Construction Equipment	On-Road Trucks	Trains	Fugitive Dust
fleet average PM emission standards. **CARB Off-Road Large Spark Ignition Equipment Rule –** LSI engines greater than 25 hp, powered by gasoline, LPG, or other alternative fuels to meet HC+NOx requirement beginning January 1, 2009.	need to have 2010 model year engines or equivalent. **CARB Drayage Truck Rule –** requires classes 7 and 8 trucks transporting cargo at CA ports to register trucks with DTR and comply with phase-in emission standards beginning 2009. This Rule sunsets on January 1, 2023, at which time drayage trucks will be subject to the CARB Statewide Truck and Bus Regulation requiring all vehicles to have 2010 model year engines or equivalent (CARB, 2009b)	2007. Applies to all switch locomotives.	

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

Off-Road Construction Equipment

Emissions of VOC, CO, NOx, SO_2, PM_{10}, and $PM_{2.5}$ from diesel-powered construction equipment were calculated using emission factors derived from the CARB OFFROAD2007 Emissions Model. Using the SCAB fleet information, the OFFROAD model was run for each of the construction years of 2013, 2014 and 2015. 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. In addition to the OFFROAD model, the EPA NONROAD2008 model was utilized for modeling emissions from specialized track maintenance equipment in the Project construction as these equipment types are not included in the OFFROAD model. Emissions factors for all off-road construction equipment were adjusted to meet the CARB In-Use Off-Road Diesel Vehicle Rule and CARB Portable Diesel-Fueled Engines Air Toxic Control Measure (ATCM).

On-Road Trucks

Emissions from on-road, heavy-duty diesel trucks during Project construction were calculated using emission factors generated by the EMFAC2011 on-road mobile source emission factor model for a truck fleet representative of the SCAB (CARB, 2011e) with the CARB Statewide Truck and Bus Regulation applied. The EMFAC2011 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 are operating 10 hours per day and 6 days per week for the duration of each element of construction;
- The number of trips for each construction activity was determined based on the rough quantities of material to be hauled as provided by the applicant in the detailed construction plan;
- Truck average round-trip travel distances are assumed to be 13 miles for water trucks, 15 miles for concrete trucks, and 40 miles for all other supply truck trips;
- All construction-related trucks were assumed to travel 40 percent of the trip distance at 40 mph, 50 percent at 25 mph, and 10 percent at 10 mph (following similar assumptions used in previous Port environmental analyses);
- Non-incidental truck idling times were 20 minutes for concrete trucks and 10 minutes for all other supply trucks.

General Cargo Ships

During construction, a general cargo ship would be used to deliver crane parts to the Port. It is assumed that one ship call is required for the delivery of a total of 20 RMG cranes to the Port.

The methodology in the Port of Los Angeles Inventory of Air Emissions 2007 was used to calculate ship emissions during transit and hoteling (Starcrest, 2008). 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:

- Without mitigation, the general cargo ship was assumed to observe the VSRP (Vessel Speed Reduction Program).
- Without mitigation, the general cargo ship was assumed to meet the fuel requirements in the CAAP measures OGV-3 and OGV-4, which call for low-sulfur fuel to be used in auxiliary and main engines respectively.
- During transport, emissions from the ship were calculated from the Port to the edge of SCAQMD waters (roughly a 50-mile, one-way trip).
- During hoteling, the ship was assumed to turn off its main engine but leave the auxiliary engines and boilers running.

Rail Delivery

Emissions from rail delivery of ballast material and rail segments were calculated by assuming that locomotives meeting fleet average Tier 2 linehaul emission standards would be used for all rail delivery. Four round trips for delivery of bulk material (switches, welded rail and ballast) would be needed. One locomotive trip would occur late in the rough grading sub-element of the lead and storage track construction, and three locomotive trips would occur late in the rough grading sub-element of the site construction. Emissions factors were modeled using guidance from the 2005 CARB MOU forecasts of locomotive emissions, and a fuel sulfur content of 15 ppm was assumed. Delivery locomotives traveling off-site were assumed to follow the line-haul duty cycle developed by EPA in their locomotive emission guidance (USEPA, 1998);

whereas the duty cycle for on-site locomotive activity was provided as part of the detailed construction plan.

Fugitive Dust

The evaluation of fugitive dust incorporates all sources of dust (e.g., demolition and grading) that might be produced during the construction phase. PM_{10} emissions were calculated using emission factor guidance from the EPA's AP-42 (USEPA, 2011; USEPA, 2006). Emissions were reduced by 69 percent from uncontrolled levels to reflect required compliance with SCAQMD Rule 403. 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. The emissions were calculated assuming 5 to 20 percent of the total activity area would be disturbed at any one time during construction.

Worker Commute Trips

Emissions from worker trips during Project construction were calculated using the default average commute distance, vehicle fleet mix and average travel speeds for passenger vehicles in the SCAB (SCAQMD, 2007a) in the land use emissions model URBEMIS 2007, version 9.2.4 (Rimpo and Associates, 2007). The detailed Project construction plan provided information about the number of crew required. Emission factors were generated by the EMFAC2011 on-road mobile source emission factor model for a fleet representative of the South Coast Air Basin (CARB, 2011e).

Construction of Alternate Sites for Businesses

The construction emissions for alternate sites for businesses were estimated using acreage-based assumptions for construction activities, assuming all construction would occur in 2013. Assumptions included equipment usage and truck trips needed for five standard construction phases– demolition, mass site grading, building construction, fine site grading, and paving. Emissions factors for off-road equipment were generated using the CARB OFFROAD2007 model and for on-road trucks were generated using the CARB EMFAC2011 model.

CARB Statewide Truck and Bus Regulation and CARB In-Use Off-Road Diesel Vehicle Rule were applied to adjust emission factors to account for rules. Similar to the proposed Project site construction, AP-42 emissions factors were used to estimate fugitive dust emissions from the construction of alternate sites for businesses.

Methodology for Determining Operational Emissions

Operational emission sources include locomotives, on-road trucks, yard hostlers, cargo handling equipment, and other service and maintenance equipment. Because many of these sources would use diesel fuel, they would generate emissions of diesel exhaust in the form of VOC, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$. Gasoline fueled sources, including service and employee vehicles, would generate vehicle exhaust and paved road dust emissions.

Data on operational emission sources was primarily obtained from the applicant's design engineers, and additionally from interaction with LAHD staff, environmental review documents for previous development projects at the Port (LAHD, 2009), the Project traffic study conducted as part of this EIR (Section 3.10), the Port of Los Angeles Inventory of Air Emissions 2010 (Starcrest, 2011), information provided by existing businesses at the proposed Project site, and other guidance documents. Operational emissions from the proposed Project site were estimated for the analysis years of 2016, 2023, 2035, 2046, and 2066. Operational emissions of businesses at the alternate sites were estimated for the same future years as for the proposed Project operations. These operational emissions are limited to California Cartage, ACTA Maintenance yard, and Fast Lane.

Business operational emissions at the alternate sites were modeled assuming no change in activity in the future years relative to the baseline year of 2010, with the exception of California Cartage. California Cartage would move to the 10-acre site and would retain the current 19 acre parcel on SCE land, comprising a total of 29 acres. All future year activities of California Cartage at the alternate site and SCE land were assumed to be scaled down by 72 percent relative to the acreage of the existing California Cartage site in 2010, which is estimated at 104 acres. Fast Lane would continue to operate on its remaining 24.5 acres which are outside of the Project site boundary and for which no change would occur as a result of the Project. The activity at the 4.5 acre alternate site for Fast Lane was included in the operational emissions and the full activity levels of Fast Lane were conservatively estimated at this 4.5-acre site.

The emissions factors for on-road truck fleets operated by the businesses at the alternate sites were modeled for future years using EMFAC2011, adjusted to reflect the Port's Clean Truck Program (CTP) and CARB's Statewide Truck and Bus Regulation. The emissions factors for vendor trucks that call at some of the businesses at the alternate sites were derived using EMFAC2011 assuming default South Coast Air Basin age distribution and adjusted to meet CARB's Statewide Truck and Bus Regulation. CHE emissions factors at the alternate business sites were modeled for future years using ARB's CHE calculator and OFFROAD2007 model.

Table 3.2-8 includes a synopsis of the regulations that were assumed in the unmitigated operational 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.

The specific approaches to calculating emissions for the various emission sources during Project operations are discussed below. Detailed operational emission calculations are presented in Appendix C1.

Table 3.2-8. Regulations and Agreements Assumed in the Unmitigated Project Operational Emissions.

Trucks	Trains	Other Equipment
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	**Emission Standards for Locomotives** – Tiered engine emission standards gradually phased in due to normal locomotive fleet turnover/manufacturing. **1998 Fleet Average Agreement** – Fleet average emission factors for NOx for linehaul locomotives operating in the South Coast area. **2005 CARB/Railroad Statewide Agreement** – Reduced line haul locomotive idling times assumed to take effect starting in 2006.	**Emission Standards for Nonroad Diesel Engines** – Gradual phase-in of Tier 1, 2, 3, and 4 standards due to normal rail yard equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **CARB In-Use Off-Road Diesel Vehicle Rule** – Off-road mobile equipment powered by diesel engines 25 hp or larger must meet the fleet average or best available control

Trucks	Trains	Other Equipment
2/1/05. **Port of Los Angeles Clean Truck Program** - Heavy-duty diesel trucks shall meet the USEPA 2007 emission standards for on-road heavy-duty diesel engines (USEPA, 2001) by 2012. **CARB Statewide Truck and Bus Regulation** Installation of PM retrofits on all heavy duty trucks beginning January 1, 2012 and replacement of older trucks starting January 1, 2015. By January 1, 2023, all vehicles need to have a 2010 model year engines or equivalent. **CARB Drayage Truck Rule –** requires classes 7 and 8 trucks transporting cargo at CA ports to register trucks with DTR and comply with phase-in emission standards beginning 2009. This Rule sunsets on January 1, 2023, at which time drayage trucks will be subject to the CARB Statewide Truck and Bus Regulation requiring all vehicles to have 2010 model year engines or equivalent	**Nonroad Diesel Fuel Rule** – 500-ppm sulfur starting June 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.	technology (BACT) requirements for NOx and PM emissions by March 1 of each year. **CARB Portable Diesel-Fueled Engines Air Toxic Control Measure** Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel shall meet weighted fleet average PM emission standards. **CARB Off-Road Large Spark Ignition Equipment Rule –** LSI engines greater than 25 hp, powered by gasoline, LPG, or other alternative fuels to meet HC+NOx requirement beginning January 1, 2009.

Note:

a) This table is not intended to be a comprehensive list of all potentially applicable regulations; rather, the table lists key regulations and agreements that substantially affect the operational emission calculations for the proposed Project emissions and assumed in the analysis. A description of each regulation or agreement is provided in Section 3.2.3.

SCIG Drayage Trucks

Emissions from on-road, heavy-duty diesel drayage trucks hauling containers during proposed Project operations were calculated using emission factors generated by the EMFAC2011 on-road mobile source emission factor model (CARB, 2011e) with modified fleet age distribution provided by Starcrest (Starcrest, 2011). The fleet age distribution considers the implementation of both the Port's Clean Truck Program (CTP) and CARB's Statewide Truck and Bus Regulation. Other assumptions regarding on-road drayage truck operations include the following:

- The number of truck trips is based upon the projected throughput of the SCIG facility for each analysis year, and assuming that 1.33 one-way drayage truck trips are generated per lift at the SCIG facility; the number of annual truck round trips in each analysis year are:
  - 2016 – 205,183 round trips
  - 2023 – 290,299 round trips
  - 2035 – 997,500 round trips
  - 2046 – 997,500 round trips
  - 2066 – 997,500 round trips.

- The average drayage truck on-site travel distance, including ingress and egress from PCH, is 3.87 miles per round trip;
- Each truck trip was assumed to travel on-site at an average speed of 15 mph;
- Total truck idle time is 24 minutes per round trip;
- Off-site drayage truck activity was modeled using roadway link-level travel distances and speeds from the transportation modeling (Section 3.10), following Project-prescribed non-residential routes to and from each of the San Pedro Bay Ports terminals (Ports of Los Angeles and Long Beach);
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were estimated separately and added to the EMFAC2011 emissions from truck exhaust, tire wear, and brake wear. Road dust emission factors were derived from an emission factor equation published by USEPA (USEPA, 2011).

Refueling Trucks

Emissions from refueling trucks were estimated using emission factors generated by the EMFAC2011 on-road mobile source emission factor model (CARB, 2011e) assuming the South Coast Air Basin default age distributions. Emission factors were adjusted to meet CARB Statewide Truck and Bus Regulation. The number and activity of these trucks for each analysis year was estimated based on the expected fuel consumption at the facility and the truck tank capacity. Other assumptions regarding refueling truck operations include the following:

- The average on-site travel distance is 0.25 miles per round trip;
- Each truck trip was assumed to travel on-site at an average speed of 10 mph;
- Total truck idle time is 56 minutes per round trip;
- Off-site refueling truck activity is modeled using link-level roadway data from transportation modeling;

Service Trucks

Emissions from on-site gasoline-fuelled service trucks were calculated using emission factors generated by the EMFAC2011 on-road mobile source emission factor model (CARB, 2011e) assuming the South Coast Air Basin default age distributions. The number and activity of these trucks were provided by the applicant. Other assumptions regarding service truck operations include the following:

- The average on-site travel distance is 0.42 miles per round trip;
- Each truck trip was assumed to travel on-site at an average speed of 10 mph;
- Total truck idle time is 10 minutes per round trip.

Yard Hostlers

Emissions from on-site yard hostlers (10 yard hostlers at full capacity of the facility) were calculated based on the activity data provided in the detailed design plan for the facility. The activity of yard hostlers for each analysis year was determined based on the ramp-up in facility throughput for future years. Yard hostlers were assumed to be low-emission technology, and were modeled as an LNG-fueled yard hostler technology. Brake-specific emissions factors were obtained from the average of multiple certified LNG engines from the CARB engine certification database (CARB, 2009c). Other assumptions regarding yard hostler operations include the following:

- Yard hostlers operates 18 hours per day;
- Yard hostlers operates at an average load factor of 65%, which is a conservative assumption;
- The average on-site travel distance is 0.98 miles per round trip.

Emergency Generator

One on-site emergency generator would operate at the facility. The emergency generator was assumed to be Tier 4-compliant for all analysis years. Emissions were calculated based on the minimum required annual operating hours in the SCAQMD (SCAQMD, 2007a).

Trains and Rail Yard Equipment

Emissions associated with hauling containers by rail include yard locomotive emissions during switching activities, and line-haul locomotive emissions during transport and idling. These emission sources would use diesel fuel.

SCIG line-haul locomotive emission factors were modeled using fleet forecasts through 2019 from the 1998 Fleet Average Agreement between CARB and the Class I railroads, and the EPA national locomotive fleet forecast for all years after 2019. Emissions from SCIG on-site line-haul locomotives were modeled using a detailed layout of track segments, a plan of assumptions for the movement of locomotives along track segments provided by the applicant, detailed duty cycle modeling to determine time-in-notch for each track segment, and emissions factors by locomotive notch setting. Locomotives entering the facility will shut down three of the four engines per locomotive consist. All emissions analysis of movements of the linehaul locomotives in breaking down arriving trains and building departing trains assume that only one of four engines per locomotive is operational. The remaining three engines are only restarted immediately prior to departure of trains from the facility. All linehaul locomotives are assumed to be equipped with Automatic Engine Start Stop (AESS) technology, which was assumed to limit idling time for any single location to 15 minutes, after which the AESS will cause the engine to shut down. For locomotives moving through the facility, the analysis assumed locomotives would idle for 2 minutes at any switch location, for 10 minutes for any train coupling or decoupling, for 10 minutes for any charging of brakes, and for 15 minutes for any start up or shut down of locomotive linehaul consists.

SCIG off-site linehaul locomotives were modeled in two distinct segments: (1) travel from the facility along the Alameda Corridor until the end of the corridor; and (2) travel beyond the Alameda Corridor to the boundary of the SCAB. For off-site travel along the Alameda Corridor, a detailed duty cycle showing time-in-notch was provided by the applicant. For off-site line-haul locomotive travel beyond the Alameda Corridor to the boundary of the SCAB, it was assumed that these locomotives would follow the EPA turnover estimates and default linehaul duty cycle (USEPA, 1998). For both segments, emissions were estimated using locomotive emission factors as described above, and a system-wide gross ton-miles per gallon statistic for the BNSF Railway.

The throughput assumptions of the facility are such that in the opening year of the facility in 2016, there would be two roundtrip train visits to the facility per day, three roundtrip train visits in 2023, and in all future analysis years (2035, 2046, and 2066) there would be eight roundtrip train visits to the facility per day.

Starting opening day (assumed to be January 1, 2016), yard and line-haul locomotives use diesel fuel with a maximum sulfur content of 15 ppm, in accordance with California Diesel Fuel Regulations and the USEPA Nonroad Diesel Fuel Rule (USEPA, 2004).

Assumptions for SCIG on-site switcher locomotive activities were provided directly by the applicant. Switcher locomotives were assumed to be a low-emission technology, and were modeled as the average emission factors of two commercially available models of non-road engine generator set (genset) switchers or emissions-equivalent technology switchers. A total of two switcher locomotives were assumed to operate at the facility. Switching occurs to break smaller subsets of cars from the larger segments brought in for loading/unloading (i.e. to remove a single bad car for repair). Typically, switching is used for maintenance, removal of empty cars, or other operational needs. Regular breakdown and build activities of incoming and departing trains occur with linehaul locomotives under self-powered conditions (i.e. not conducted by switching locomotives). Therefore switching activities were assumed to be very limited at the SCIG facility, and to occur throughout the facility.

Rail yard equipment that would be used at the SCIG facility includes a diesel rail car wheel change machine, gasoline-fueled welding machines, gasoline-fueled air compressors and transport refrigerant units (TRUs). Approximately 0.13 percent of containers handled at the SCIG facility would be TRUs. Electrical plug-in facilities would be provided for TRUs, and TRU emissions were only estimated for the small fraction of time between arrival of TRUs and plug-in.

Emissions from the diesel rail car wheel change machine were calculated using the ARB's CHE calculator by considering the equipment to be newly purchased in the 2016 opening year and tracking turnover of the equipment for all future years. Activity data for the wheel change machine were provided by the applicant. On the other hand, emissions from welders, air compressors and TRUs were calculated using emission factors derived from the CARB OFFROAD2007 model assuming the SCAB default age distributions. Other assumptions regarding rail operations include the following:

- Three of the four engines making up a locomotive consist would shut down after entering the facility;
- The line-haul locomotive would conduct most of the yarding and building activities on site with one engine under power;
- All four engines in the locomotive consist would only be restarted immediately prior to departure of a train from the facility;
- Line-haul locomotive idling would be limited to no more than 15 minutes at any single location due to the use of AESS technology;
- Switcher locomotives were assumed to be actively operating at the facility for a total of 20 minutes per day;
- A total of two diesel rail car wheel change machines would be used;
- TRUs would be diesel-powered for an average operational time of 30 minutes upon arrival at the facility before being plugged into the electrical outlets, after which the TRU diesel engine would be shut down; and;
- A total of two gasoline-powered welders and one gasoline-powered air compressor would be used.

Worker Commute Trips

Emissions from worker trips during Project operation were calculated using the default average commute distance and average travel speeds for passenger vehicles in the SCAB (SCAQMD, 2007a) in the land use emissions model URBEMIS 2007, version 9.2.4 (Rimpo and Associates, 2007). The number of worker trips was estimated based on the employee count data at the facility, adjusted for ramp-up in facility throughput for future years. Emission factors were generated by the EMFAC2011 on-road mobile source emission factor model for a fleet representative of the SCAB (CARB, 2011e). SCIG worker commute vehicles were assumed to travel on-site for 0.42 miles per round trip at an average speed of 10 mph and idle for 4 minutes per round trip.

Displaced Businesses

Other businesses are not considered whose leases would be non-renewed or terminated; thereby resulting in the displacement of those businesses that would require them to move to other locations that are unknown or were not identified during the time of this analysis. However, given that those businesses would likely move to other compatible sites in the general port area as part of their own business plans (see also Section 3.8 Land Use for general discussion), this analysis conservatively accounts for the future emissions attributable to those displaced businesses because they can be reasonably estimated as occurring within the SCAB. In the absence of specific site locations, air dispersion modeling to estimate air concentrations is not possible as it requires specific information regarding source geometry and location relative to receptor locations.

For businesses at the Project site whose leases would be terminated, and that would be required to move to other unknown locations, the activities of these “displaced” businesses are accounted for in the analysis. Future on-site emissions attributable to these displaced businesses were estimated as occurring somewhere within the SCAB, assuming a 10% growth rate on the baseline activity levels of these businesses by 2016 and for all future years. Given the absence of specific site locations where the displaced businesses would move to, the off-site emissions of these businesses are speculative and it was not possible to estimate off-site emissions such as drayage trucks and vendor truck trips. Because the location of these displaced businesses is not known, these emissions were evaluated for operational mass emissions impacts (AQ-3) and not for operational pollutant concentration impacts (AQ-4) or health risk impacts (AQ-7). Accounting for the emissions under AQ-4 or AQ-7 would require speculative assumptions regarding locations.

CEQA Impact Determination

Section 15125 of the CEQA Guidelines requires an EIR 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 EIR, the CEQA baseline for determining the significance of potential impacts of the proposed Project is 2010, except for AQ-7 where a floating baseline is used. As explained in Section 1.5.5, the reason for the selection of the 2010 baseline is that the time of the NOP no longer represents existing conditions.

The CEQA baseline represents the setting at a fixed point in time (2010) and differs from the No Project Alternative (Alternative 1 discussed in Chapter 5) 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 proposed project site that would occur without additional approvals (i.e., activity growth of existing on-site uses).

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.

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 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 or area of soil 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 Project site, per day
  - Duration of construction activities

For the purposes of this analysis, the air quality thresholds of significance for construction activities are based on emissions and concentration thresholds established by the SCAQMD (2011). Construction-related air emissions would be considered significant if it would result in one or more of the following:

AQ-1: The proposed Project would result in construction-related emissions that exceed any of the following SCAQMD daily thresholds of significance in Table 3.2-9.

Table 3.2-9. SCAQMD Thresholds for Construction Emissions.

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

Source: SCAQMD, 2011

AQ-2: Proposed Project construction would result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance shown in Table 3.2-10[6]. However, to evaluate Project impacts to ambient NO_2 levels, the analysis used the current SCAQMD NO_2 thresholds, which is equivalent to the revised and more stringent 1-hour California ambient air quality standard of 338 $\mu g/m^3$.

Table 3.2-10. SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Proposed Project Construction.

Air Pollutant	Ambient Concentration Threshold
Nitrogen Dioxide (NO_2)	
1-hour average	0.18 ppm (338 $\mu g/m^3$)
Annual average	0.03 ppm
Particulates (PM_{10} or $PM_{2.5}$)	
24-hour average	10.4 $\mu g/m^3$
Sulfate	
24-hour average	1.0 $\mu g/m^3$
Carbon Monoxide (CO)	
1-hour average	20 ppm (23,000 $\mu g/m^3$)
8-hour average	9.0 ppm (10,000 $\mu g/m^3$)

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 $PM_{2.5}$ thresholds are an incremental threshold; meaning that the maximum predicted impacts from construction activities (without adding background concentrations) are compared to these thresholds.

c) The SCAQMD has also established a threshold for sulfates, but it 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 used the current SCAQMD NO_2 thresholds, which is equivalent to the revised 1-hour California ambient air quality standard of 338 $\mu g/m^3$.

Source: SCAQMD, 2011.

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6 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 specific significance thresholds for operational air quality impacts are based on SCAQMD standards, which were adopted by the City of Los Angeles and apply to projects in the City of Long Beach and City of Carson. 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 would exceed 10 tons per year of VOCs or any of the SCAQMD thresholds of significance in Table 3.2-11. For determining CEQA significance, these thresholds are compared to the net change in Project emissions relative to CEQA baseline (2010) conditions.

Table 3.2-11. SCAQMD Thresholds for Operational Emissions.

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

Source: SCAQMD, 2011

AQ-4: Proposed Project operations would result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance in Table 3.2-12[7]. However, to evaluate Project impacts to ambient NO_2 levels, the analysis used the current SCAQMD NO_2 thresholds, which is equivalent to the revised 1-hour and annual California ambient air quality standards of 338 and 56 $\mu g/m^3$, respectively.

[7] 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 3.2-12. 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	
24-hour average (PM_{10} or $PM_{2.5}$)	2.5 µg/m^3
annual average (PM_{10})	1.0 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 PM10 threshold is an incremental threshold. For CEQA significance, the maximum increase in concentration relative to the CEQA baseline is compared to the threshold.

c) The SCAQMD has also established thresholds for sulfates and annual PM10, 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 used the current SCAQMD NO_2 thresholds, which is equivalent to the revised 1-hour and annual California ambient air quality standards of 338 and 56 µg/m^3, respectively.

Source: SCAQMD, 2011.

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. (SCAQMD, 2011)
- 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. (SCAQMD, 1996)

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

For the purposes of this impact analysis, sensitive receptors are defined as residences, board and care facilities, schools, playgrounds, hospitals, parks, childcare centers, and outdoor athletic facilities.

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 is > 10 in 1 million
- Noncancer Hazard Index is > 1.0
- Cancer Burden > 0.5 excess cancer cases in areas ≥ 1 in 1 million

These health-effects thresholds were established by the SCAQMD and adopted by the Port for evaluating new projects under CEQA (SCAQMD, 2011). The San Pedro Bay Ports Clean Air Action Plan (POLA and POLB, 2006) has also identified the 10 in a million incremental cancer risk for residential receptors as a Project Specific Standard for CEQA analyses conducted by the Port.

AQ-8: The proposed Project would conflict with or obstruct implementation of an applicable air quality plan.

3.2.4.3 Impacts and Mitigation

Impact AQ-1: The proposed Project would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-9.

Table 3.2-13 presents peak daily criteria pollutant emissions associated with construction of the proposed Project and alternate sites for businesses without mitigation, and Table 3.2-14 presents peak daily criteria pollutant emissions associated with construction without mitigation overlapped with the operations of businesses that would move to the alternate sites as part of the proposed Project. The overlap of construction emissions with business operations at the alternate sites was evaluated in order to capture the peak emissions levels from these activities, as they are expected to overlap in time. These tables contain peak daily construction emissions for each project year, as well as significance determinations. Maximum emissions for each construction element were determined by totaling the daily emissions from the individual construction activities and business operational activities at the alternate sites that overlap in the proposed construction schedule. Detailed tables of emissions for each proposed Project activity can be found in Appendix C1. In addition, Appendix C1 contains data on emission levels for each construction equipment type in each proposed Project activity.

Table 3.2-13. Summary of Peak Daily Construction Emissions — Proposed Project without Mitigation.

Source Category	Peak Daily Emissions (lb/day) [c]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Construction Year 2013						
SCIG and Alternate Business Locations Construction - On-Site [d]	157	614	1138	2	443	110
SCIG and Alternate Business Locations Construction - Off-Site [d]	93	263	1298	2	50	39
2013 Total Peak Daily [b]	**251**	**877**	**2436**	**3**	**493**	**149**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Construction Year 2014						
SCIG Construction - On-Site [d]	66	278	490	1	555	98
SCIG Construction - Off-Site [d]	21	87	367	1	31	13
2014 Total Peak Daily [b]	**87**	**365**	**857**	**1**	**586**	**110**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**
Construction Year 2015						
SCIG Construction - On-Site [d]	42	148	251	0	12	11
SCIG Construction - Off-Site [d]	201	430	3787	55	69	57
2015 Total Peak Daily [b]	**243**	**578**	**4038**	**56**	**81**	**67**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**

a) CEQA significance is determined by comparing the peak daily construction emissions directly to the thresholds.
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) On-site refers to activities within the footprint of SCIG construction or within the alternate business locations construction sites. Off-site refers to truck and vehicle trips not on these construction sites within the SCAB.

Table 3.2-14. Summary of Peak Daily Construction Emissions Overlapped with Alternate Business Locations Operations during Construction Period — Proposed Project without Mitigation.

Source Category	Peak Daily Emissions (lb/day) [c]					
	VOC	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Construction Year 2013						
SCIG and Alternate Business Locations Construction - On-Site [d]	157	614	1138	2	443	110
SCIG and Alternate Business Locations Construction - Off-Site [d]	93	263	1298	2	50	39
Alternate Business Locations Operations - On-Site [e]	32	1565	263	0	14	10
Alternate Business Locations Operations - Off-Site [e]	18	137	315	1	47	17
2013 Total Peak Daily [b]	**301**	**2579**	**3014**	**4**	**555**	**176**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Construction Year 2014						
SCIG Construction - On-Site [d]	66	278	490	1	555	98
SCIG Construction - Off-Site [d]	21	87	367	1	31	13
Alternate Business Locations Operations - On-Site [e]	14	477	141	0	7	5
Alternate Business Locations Operations - Off-Site [e]	8	60	155	0	22	7
2014 Total Peak Daily [b]	**109**	**902**	**1153**	**2**	**616**	**122**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Construction Year 2015						
SCIG Construction - On-Site [d]	42	148	251	0	12	11
SCIG Construction - Off-Site [d]	201	430	3787	55	69	57
Alternate Business Locations Operations - On-Site [e]	14	477	137	0	7	5
Alternate Business Locations Operations - Off-Site [e]	8	55	142	0	22	7
2015 Total Peak Daily [b]	**265**	**1110**	**4359**	**56**	**110**	**79**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**

a) CEQA significance is determined by comparing the peak daily construction emissions directly to the thresholds.
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.
d) On-site refers to activities within the footprint of SCIG construction or within the alternate business construction sites. Off-site refers to truck and vehicle trips not on these construction sites.
e) Existing businesses are assumed to operate at their existing sites in 2013 and at operate at their alternate business locations in 2014 and 2015.

As shown in Table 3.2-13, the unmitigated peak daily construction emissions in 2013 would exceed the SCAQMD daily emission thresholds for VOC, CO, NOx, PM_{10}, and $PM_{2.5}$ under CEQA. In 2014 the SCAQMD daily emission thresholds would be exceeded by the unmitigated peak daily construction emissions for VOC, NOx, PM_{10} and $PM_{2.5}$, and in 2015 for VOC, CO, NOx and $PM_{2.5}$. Considering the overlap of construction activities and the operations of alternate business locations (Cal Cartage, ACTA and Fast

Lane) during the construction period in 2013, 2014, and 2015, as shown in Table 3.2-14, the SCAQMD daily emissions thresholds would be exceeded by the unmitigated peak daily construction and alternate business locations operational emissions for VOC, CO, NOx, PM_{10} and $PM_{2.5}$ during 2013 and 2014, and VOC, CO, NOx and $PM_{2.5}$ in 2015.

The largest contributors to peak daily construction emissions include rail delivery of material and supplies during 2013, and delivery of crane parts and material by ship in 2015. In 2013 and 2014, off-road construction equipment emissions are also large contributors to the peak daily construction emissions in these years.

Impact Determination

The proposed Project would exceed the daily construction emission thresholds for VOC, CO, NOx, PM_{10}, and $PM_{2.5}$ during the construction period of 2013-2015. Therefore, significant impacts would occur.

Mitigation Measures

Mitigation measures for proposed Project construction were derived, where feasible, from the LAHD's Sustainable Construction Guidelines, in consultation with LAHD staff, and applicable measures of the CAAP. These mitigation measures are required during construction and are to be implemented by the construction contractor.

MM AQ-1: Fleet Modernization for Construction Equipment.

- Tier Specifications:

   a. <u>From January 1, 2012 to December 31, 2014</u>: All off-road diesel-powered construction equipment greater than 50 hp, except marine vessels and harbor craft, will meet Tier-3 off-road emission standards at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-verified Level 3 DECS. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. This mitigation measure was quantified and included in the mitigated construction emissions in Tables 3.2-15 and 3.2-16.

   b. <u>From January 1, 2015 on</u>: All off-road diesel-powered construction equipment greater than 50 hp, except marine vessels and harbor craft, will meet Tier-4 off-road emission standards at a minimum. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 <u>diesel</u> emissions control strategy for a similarly sized engine as defined by CARB regulations. This mitigation measure was quantified and included in the mitigated construction emissions in Tables 3.2-15 and 3.2-16.

As per the Sustainable Construction Guidelines for CEQA project mitigation, construction equipment were modeled according the following fleet mix:

a. In 2012 to 2014: 50% Tier 3 Level 3, 20% Tier 2 Level 3, 10% Tier 1 Level 3, 10% Tier 2 Level 2, and 10% Tier 1 Level 2.

b. In 2015: 50% Tier 4, Tier 3 Level 3, 20% Tier 3 Level 3, 10% Tier 1 Level 3, 10% Tier 2 Level 2, and 10% Tier 1 Level 2)

A copy of each unit's certified tier specification, BACT documentation, and 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 exists, and the contractor is able to show that any of these circumstances exists:

- o A piece of specialized equipment as specified in (a) and (b) above is unavailable within 200 miles of the Port of Los Angeles, including through a leasing agreement. If this circumstance exists, the equipment must comply with one of the options contained in the Step Down Schedule as shown in Table A of the guidelines document. (LAHD, 2009) At no time shall equipment meet less than a Tier 1 engine standard with a CARB-verified Level 2 DECS.
- o The availability of construction equipment shall be reassessed on an annual basis. For example, if a piece of equipment is not available in 2013, the contractor shall reassess this availability on January 1, 2014.

- Construction equipment shall incorporate, where feasible emissions-savings technology such as hybrid drives and specific fuel economy standards. This mitigation measure was not quantified in the mitigated construction emissions.
- Idling shall be restricted to a maximum of 5 minutes when not in use. This mitigation measure was not quantified in the mitigated construction emissions.

MM AQ-2: Fleet Modernization for On-Road Trucks.

- Trucks used in construction will be required to comply with EPA Standards as described below. These standards were quantified and included in the mitigated construction emissions in Tables 3.2-15 and 3.2-16:

  a. On-Road Trucks except for Import Haulers and Earth Movers: From January 1, 2012 on: All on-road heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used at the Port of Los Angeles will comply with EPA 2007 on-road emission standards for PM10 and NOx (0.01 g/bhp-hr and at least 1.2 g/bhp-hr, respectively).

  b. For Import Haulers[8] Only: From January 1, 2012 on: All on-road heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used to move dirt to and from the construction site via public roadways at the Port of Los Angeles will comply with EPA 2004 on-road emission standards for PM10 and NOx (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively).

  c. For Earth Movers9 Only: From January 1, 2012 on: All heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used to move dirt within the construction site at the Port of Los Angeles will comply with EPA 2004 on-road emission standards for PM10 and NOx (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively).

[8] Import Haulers are defined as all trucks hauling dirt to and from the construction site via public roadways.

[9] Earth Movers are defined as all trucks moving and/or working in dirt within the construction site (i.e. trucks are confined to the construction site and do not regularly enter or exit public roadways.

- A copy of each unit's certified EPA rating and each unit's CARB or SCAQMD operating permit, will be provided at the time of mobilization of each applicable unit of equipment.
- Trucks hauling material such as debris or any fill material will be fully covered while operating off Port property. This mitigation measure was not quantified in the mitigated construction emissions.
- Idling will be restricted to a maximum of 5 minutes when not in use. This mitigation measure was not quantified in the mitigated construction emissions.

MM AQ-3: Additional Fugitive Dust Controls.

The calculation of fugitive dust (PM) from Project earth-moving activities assumes a 69 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 Project construction contractor shall submit a fugitive dust control plan or notification to SCAQMD (for construction sites greater than 50 acres) prior to construction and comply with the requirements of Rule 403 throughout construction.

The following measures to further reduce fugitive dust emissions to a total reduction of 90 percent from uncontrolled levels should be implemented and/or included in the contractor's fugitive dust control plan:

- SCAQMD's Best Available Control Technology (BACT) measures must be followed on all projects. They are outlined on Table 1 in Rule 403. Large construction projects (on a property which contains 50 or more disturbed acres) shall also follow Rule 403 Tables 2 and 3.
- Active grading sites shall be watered three times per day, as also addressed in SCAQMD Rule 403.
- Contractors shall apply approved non-toxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.
- 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. ("Spilling Loads on Highways").
- 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.
- Open storage piles (greater than 3 feet tall and a total surface area of 150 square feet) shall be covered with a plastic tarp or chemical dust suppressant.
- Stabilize the materials while loading, unloading and transporting to reduce fugitive dust emissions.
- Belly-dump truck seals should be checked regularly to remove trapped rocks to prevent possible spillage.

- Comply with track-out regulations and provide water while loading and unloading to reduce visible dust plumes.
- Waste materials should be hauled off-site immediately.
- Pave road and road shoulders where available.
- Traffic speeds on all unpaved roads shall be reduced to 15 mph or less.
- Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.
- Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the extent practicable.
- Require the use of clean-fueled sweepers pursuant to SCAQMD Rule 1186 and Rule 1186.1 certified street sweepers. Sweep streets at the end of each day if visible soil is carried onto paved roads on-site or roads adjacent to the site to reduce fugitive dust emissions.
- Appoint a construction relations officer to act as a community liaison concerning on-site construction activity including resolution of issues related to PM_{10} generation.
- This mitigation measure was quantified and included in the mitigated construction emissions in Tables 3.2-15 and 3.2-16.

MM AQ-4. Best Management Practices.

The following measures are required on construction equipment (including onroad trucks)[10]:

- Use diesel oxidation catalysts and catalyzed diesel particulate traps.
- Maintain equipment according to manufacturers' specifications.
- Restrict idling of construction equipment to a maximum of 5 minutes when not in use.
- 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.

Because the effectiveness of this measure has not been established and includes some emission reduction technology which may already be incorporated into equipment as part of the Tier level requirement in **MM AQ-1**, it is not quantified in this study.

MM AQ-5. General Construction Mitigation Measure.

For any of the above construction mitigation measures (**MM AQ-1** through **AQ-3**), if a CARB-certified technology becomes available and is shown to be equal or more effective in terms of emissions performance than the existing measure, the technology may be used to replace the existing measure pending approval by the LAHD. Because the effectiveness of this measure cannot be established, it is not quantified in this study.

[10] Where not already covered under MM AQ-1.

MM AQ-6. Special Precautions near Sensitive Sites.

When construction activities are planned within 1,000 feet of sensitive receptors (defined as schools, playgrounds, day care centers, and hospitals) identified in Table 3.2-6, the construction contractor shall notify each of these sites in writing at least 30 days before construction activities begin.

Because the effectiveness of this measure has not been established, it is not quantified in this study.

Residual Impacts

Tables 3.2-15 and 3.2-16 present the maximum daily criteria pollutant emissions associated with construction of the proposed Project, after the application of **MM AQ-1** through **MM AQ-3**, without and with the overlap of alternate business locations operations respectively.

As shown in Table 3.2-15, without the overlap of the alternate business locations activities, the air quality impact of construction after mitigation would remain significant and unavoidable for VOC, CO, NOx, PM_{10}, and $PM_{2.5}$ in 2013, significant and unavoidable for NOx and PM_{10} in 2014, and significant and unavoidable for VOC, CO, NOx and $PM_{2.5}$ in 2015. As shown in Table 3.2-16, with the overlap of the alternate business locations, the air quality impact of construction after mitigation would remain significant and unavoidable for VOC, CO, NOx, PM_{10} and $PM_{2.5}$ in 2013 and 2014, and significant and unavoidable for VOC, CO, NOx, and $PM_{2.5}$ in 2015.

Table 3.2-15. Summary of Peak Daily Construction Emissions — Proposed Project with Mitigation.

Source Category	Peak Daily Emissions (lb/day) [c]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Construction Year 2013						
SCIG and Alternate Business Locations Construction - On-Site [d]	125	606	1056	2	217	43
SCIG and Alternate Business Locations Construction - Off-Site [d]	93	263	1234	2	49	39
2013 Total Peak Daily [b]	**219**	**869**	**2290**	**3**	**267**	**82**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Construction Year 2014						
SCIG Construction - On-Site [d]	45	276	446	1	311	39
SCIG Construction - Off-Site [d]	21	87	229	1	31	12
2014 Total Peak Daily [b]	**66**	**363**	**675**	**1**	**342**	**51**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**No**	**No**	**Yes**	**No**	**Yes**	**No**
Construction Year 2015						
SCIG Construction - On-Site [d]	25	138	235	0	4	3
SCIG Construction - Off-Site [d]	201	430	3786	55	69	57
2015 Total Peak Daily [b]	**227**	**568**	**4021**	**56**	**73**	**60**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**

a) CEQA significance is determined by comparing the peak daily construction emissions directly to the thresholds.
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) On-site refers to activities within the footprint of SCIG construction or within the alternate business construction sites. Off-site refers to truck and vehicle trips not on these construction sites.

Table 3.2-16. Summary of Peak Daily Construction Emissions with Alternate Business Locations Operations (Cal Cartage, ACTA and Fast Lane) during Construction Period — Proposed Project with Mitigation.

Source Category	Peak Daily Emissions (lb/day) [c]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Construction Year 2013						
SCIG and Alternate Business Locations Construction - On-Site [d]	125	606	1056	2	217	43
SCIG and Alternate Business Locations Construction - Off-Site [d]	93	263	1234	2	49	39
Alternate Business Locations Operations - On-Site [e]	32	1565	263	0	14	10
Alternate Business Locations Operations - Off-Site [e]	18	137	315	1	47	17
2013 Total Peak Daily [b]	**269**	**2571**	**2868**	**4**	**329**	**109**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Construction Year 2014						
SCIG Construction - On-Site [d]	45	276	446	1	311	39
SCIG Construction - Off-Site [d]	21	87	229	1	31	12
Alternate Business Locations Operations - On-Site [e]	14	477	141	0	7	5
Alternate Business Locations Operations - Off-Site [e]	8	60	155	0	22	7
2014 Total Peak Daily [b]	**88**	**900**	**970**	**2**	**371**	**63**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**
Construction Year 2015						
SCIG Construction - On-Site [d]	25	138	235	0	4	3
SCIG Construction - Off-Site [d]	201	430	3786	55	69	57
Alternate Business Locations Operations - On-Site [e]	14	477	137	0	7	5
Alternate Business Locations Operations - Off-Site [e]	8	55	142	0	22	7
2015 Total Peak Daily [b]	**248**	**1100**	**4300**	**56**	**102**	**72**
Thresholds	**75**	**550**	**100**	**150**	**150**	**55**
Significant? [a]	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**

a) CEQA significance is determined by comparing the peak daily construction emissions directly to the thresholds.
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) On-site refers to activities within the footprint of SCIG construction or within the alternate business construction sites. Off-site refers to truck and vehicle trips not on these construction sites.
e) Existing businesses are assumed to operate at their existing sites in 2013 and at their alternate locations in 2014 and 2015.

Impact AQ-2: The proposed Project construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-10.

Dispersion modeling of onsite and offsite proposed Project construction emissions was performed to assess the impact of the unmitigated proposed Project construction on offsite ambient air concentrations. A screening method, which results in conservative predictions of concentrations from proposed Project construction emissions, was used. For instance, rather than modeling each construction year to identify the maximum pollutant concentrations, a single composite emissions scenario was modeled as a conservative approach. The composite emissions scenario is a combination of the peak year (for the annual PM_{10} concentration threshold) or peak day (for the 24-hour PM_{10} and $PM_{2.5}$ concentration thresholds) construction emissions within the modeling domain by source category. The peak year or day construction emissions for a particular source category may not necessarily occur in the same year or day as the other categories; and therefore results in conservative estimates.

The EPA dispersion model AERMOD, version 09292, was used to predict maximum ambient pollutant concentrations at or beyond the proposed Project site. A summary of the dispersion modeling results is presented here, and the complete dispersion modeling report is included in Appendix C2.

Tables 3.2-17 and 3.2-18 present the maximum offsite ground level concentrations of criteria pollutants estimated for unmitigated Project construction including SCIG facility construction and the construction of alternate business location sites, including the operations of alternate business locations.

Table 3.2-17 indicates that the maximum 1-hour NO_2 concentration of 1,274 $\mu g/m^3$ would exceed the SCAQMD significance threshold of 338 $\mu g/m^3$. The annual NO_2 concentration of 74 $\mu g/m^3$ would exceed the SCAQMD significance threshold of 56 $\mu g/m^3$. The 98th percentile 1-hour NO_2 concentration of 1,171 $\mu g/m^3$ would also exceed the NAAQS of 189 $\mu g/m^3$, which is based on an 8th highest maximum value and is a standard not yet adopted as a threshold of significance by the SCAQMD. The maximum 1-hour and 8-hour CO concentrations from construction of the proposed Project would be well below the SCAQMD significance thresholds.

The maximum 1-hour and 24-hour SO_2 concentrations would be below the SCAQMD significance thresholds. The 99th percentile 1-hour SO_2 concentration of 53 $\mu g/m^3$ would also be below the NAAQS of 196 $\mu g/m^3$, a standard not yet adopted by SCAQMD as the SCAB is in attainment.

Table 3.2-18 indicates that the maximum 24-hour PM_{10} concentration of 61.8 $\mu g/m^3$ would exceed the SCAQMD significance threshold for construction of 10.4 $\mu g/m^3$ and that the annual PM_{10} concentration of 13.1 $\mu g/m^3$ would exceed the SCAQMD significance threshold of 1.0 $\mu g/m^3$. The maximum 24-hour $PM_{2.5}$ concentration of 11.9 $\mu g/m^3$ would also exceed the SCAQMD significance threshold for construction of 10.4 $\mu g/m^3$.

Table 3.2-17. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Project (With Cal Cartage, ACTA and Fast Lane Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project	Background Concentration[b]	Total Ground Level Concentration[a]	SCAQMD Threshold
		(μg/m^3)	(μg/m^3)	(μg/m^3)	(μg/m^3)
NO_2 [c]	1-hour	1,029	245	**1,274**	338
	1-hour [d]	1,029	142	**1,171**	(189)[f]
	Annual	34	40	**74**	56
CO	1-hour	1,244	5,842	7,086	23,000
	8-hour	287	4,467	4,754	10,000
SO_2	1-hour	2.0	236	238	655
	1-hour [e]	2.0	51	53	(196)[f]
	24-hour	0.3	31	32	105

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2 , SO_2, and CO are absolute unmitigated Project concentrations.

b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

f) A standard not yet adopted as a threshold of significance by SCAQMD as the SCAB is in attainment. .

Table 3.2-18. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Project (With Cal Cartage, ACTA and Fast Lane Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project[b]	Maximum Modeled Concentration of CEQA Baseline[b]	Ground-Level Concentration CEQA Increment[a,b]	SCAQMD Threshold
		(μg/m^3)	(μg/m^3)	(μg/m^3)	(μg/m^3)
PM_{10}	24-hour	61.8	--	**61.8**	10.4
	Annual	13.1	--	**13.1**	1.0
$PM_{2.5}$	24-hour	11.9	--	**11.9**	10.4

a) Exceedances of the threshold are indicated in bold. The thresholds for PM10 and PM2.5 are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The CEQA Increment represents unmitigated proposed Project minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled project concentration.

Tables 3.2-19 and 3.2-20 present the maximum off-site ground level concentrations of pollutants estimated for the unmitigated Project construction, excluding the alternate business locations operations.

Table 3.2-19. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Project (Without Alternate Business Locations Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project	Background Concentration[b]	Total Ground Level Concentration[a]	SCAQMD Threshold
		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
NO_2 [c]	1-hour	652	245	**897**	338
	1-hour [d]	652	142	**794**	(189)[f]
	Annual	33	40	**73**	56
CO	1-hour	433	5,842	6,275	23,000
	8-hour	169	4,467	4,636	10,000
SO_2	1-hour	1.3	236	237	655
	1-hour [e]	1.3	51	52	(196)[f]
	24-hour	0.3	31	32	105

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2 , SO_2, and CO are absolute unmitigated Project concentrations.
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.
c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.
d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
f) A standard not yet adopted as a threshold of significance by SCAQMD as the SCAB is in attainment. .

Table 3.2-20. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Project (Without Alternate Business Locations Operations).

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project[b]	Maximum Modeled Concentration of CEQA Baseline[b]	Ground-Level Concentration CEQA Increment[a,b]	SCAQMD Threshold
		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
PM_{10}	24-hour	61.8	--	**61.8**	10.4
	Annual	13.1	--	**13.1**	1.0
$PM_{2.5}$	24-hour	11.7	--	**11.7**	10.4

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 CEQA Increment represents unmitigated Project minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled proposed project concentration.

Impact Determination

Construction of the proposed Project would exceed the SCAQMD thresholds for 1-hour and annual NO_2, 24-hour and annual PM_{10}, and 24-hour $PM_{2.5}$; therefore, there are significant impacts under AQ-2.

Mitigation Measures

Implementation of mitigation measures **MM AQ-1** through **MM AQ-3**, which assumes that the Port Sustainable Construction Guidelines for reducing emissions from construction equipment operating at the proposed Project site including alternate business locations are followed, would reduce the ambient impact relative to the unmitigated Project levels.

Tables 3.2-21 and 3.2-22 present the maximum off-site ground level concentrations of criteria pollutants estimated for the mitigated Project construction. These data show that the mitigation measures would reduce all pollutant impacts, but that 1-hour and annual NO_2 and 24-hour and annual PM_{10} increments would still exceed the SCAQMD ambient thresholds. The 24-hour $PM_{2.5}$ increment would fall below the SCAQMD ambient threshold.

Table 3.2-21. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Project (With Cal Cartage, ACTA and Fast Lane Operations) – with Mitigation.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project	Background Concentration[b]	Total Ground Level Concentration[a]	SCAQMD Threshold
		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
NO_2 [c]	1-hour	995	245	**1,240**	338
	1-hour [d]	995	142	**1,137**	(189)[f]
	Annual	31	40	**71**	56
CO	1-hour	1,242	5,842	7,084	23,000
	8-hour	286	4,467	4,754	10,000
SO_2	1-hour	2.0	236	238	655
	1-hour [e]	2.0	51	53	(196)[f]
	24-hour	0.3	31	32	105

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2 , SO_2, and CO are absolute mitigated Project concentrations.

b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.

c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO2 for the 1-hour averaging period.

d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.

f) A standard not yet adopted as a threshold of significance by SCAQMD as it is in attainment.

Table 3.2-22. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Project (With Cal Cartage, ACTA and Fast Lane Operations) – with Mitigation.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project[b]	Maximum Modeled Concentration of CEQA Baseline[b]	Ground-Level Concentration CEQA Increment[a,b]	SCAQMD Threshold
		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
PM_{10}	24-hour	35.9	--	**35.9**	10.4
	Annual	8.5	--	**8.5**	1.0
$PM_{2.5}$	24-hour	5.3	--	5.3	10.4

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 CEQA Increment represents mitigated Project minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled mitigated proposed project concentration.

Tables 3.2-23 and 3.2-24 present the maximum offsite ground level concentrations of criteria pollutants estimated for the mitigated Project construction, excluding alternate business locations operations.

Table 3.2-23. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Construction of the Proposed Project (Without Alternate Business Locations Operations) – with Mitigation.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project	Background Concentration[b]	Total Ground Level Concentration[a]	SCAQMD Threshold
		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
NO_2 [c]	1-hour	612	245	**857**	338
	1-hour [d]	612	142	**754**	(189)[f]
	Annual	31	40	**71**	56
CO	1-hour	430	5,842	6,271	23,000
	8-hour	168	4,467	4,636	10,000
SO_2	1-hour	1.3	236	237	655
	1-hour [e]	1.3	51	52	(196)[f]
	24-hour	0.3	31	32	105

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2 , SO_2, and CO are absolute mitigated Project concentrations.
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.
c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO2 for the 1-hour averaging period.
d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
f) A standard not yet adopted as a threshold of significance by SCAQMD as it is in attainment.

Table 3.2-24. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Construction of the Project (Without Alternate Business Locations Operations) – with Mitigation.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project Alternative[b]	Maximum Modeled Concentration of CEQA Baseline[b]	Ground-Level Concentration CEQA Increment[a,b]	SCAQMD Threshold
		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
PM_{10}	24-hour	35.8	--	**35.8**	10.4
	Annual	8.5	--	**8.5**	1.0
$PM_{2.5}$	24-hour	4.7	--	4.7	10.4

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 CEQA Increment represents mitigated Project minus CEQA baseline. However, because there is no construction for the CEQA baseline, the CEQA increment for PM_{10} and $PM_{2.5}$ is equivalent to the modeled mitigated proposed project concentration.

Residual Impacts

Project construction residual air quality impacts would remain significant and unavoidable after mitigation for 1-hour and annual NO_2 and 24-hour and annual PM_{10} concentrations.

Impact AQ-3: The proposed Project would not result in operational emissions that would exceed 10 tons per year of VOCs and SCAQMD thresholds of significance in Table 3.2-11.

Table 3.2-25 presents unmitigated average daily criteria pollutant emissions associated with operation of the proposed Project for the analysis years of 2016, 2023, 2035, 2046, and 2066. The average daily emissions represent the annual emissions divided by 360 days per year. Project emissions are compared to the CEQA Baseline (2010) to determine CEQA significance as described in Section 3.2.4.1.

The operational emissions calculations assume the following activity levels:

- The proposed Project would begin operation in 2016 and generate 205,183 annual truck round trips to port terminals in 2016, 290,299 annual truck round trips in 2023, and 997,500 annual truck round trips in 2035, 2046, and 2066;
- The proposed Project would generate 2 train round trips per day in 2016, 3 train roundtrips per day in 2023, and 8 train round trips per day in 2035, 2046, and 2066;
- The proposed Project would generate 93 daily employee vehicle commute round trips in 2016, 131 daily employee vehicle commute round trips in 2023, and 450 daily round trips in 2035, 2046, and 2066;
- It was assumed that two low-emission yard hostlers would be used in 2016, three low-emission yard hostlers in 2023, increasing to 10 such hostlers in 2035 through 2066.

The major contributors to Project operational emissions include on-road trucks, line-haul locomotives and, primarily cargo-handling equipment from the alternate business sites and the displaced businesses whose emissions would occur somewhere in the SCAB at unknown sites. All Project source categories were modeled as meeting future year emission standards or regulations that would substantially reduce their emissions over time, due to the replacement of older vehicles and equipment with newer models meeting more stringent emission standards.

Table 3.2-25. Average Daily Operational Emissions without Mitigation– Proposed Project.

Source Category	**Average Daily Emissions (lb/day)** [a, e]					
	VOC	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Project Year 2016						
Locomotives On-Site	1	4	25	0	1	1
Locomotives Off-Site [b]	20	58	654	1	14	13
Trucks On-Site	11	38	75	0	8	2
Trucks Off-Site [b]	6	24	94	0	8	3
Railyard Equipment	6	204	3	0	0	0
TRU	0	0	0	0	0	0
Employee Commute On-Site	0	0	0	0	0	0
Employee Commute Off-Site [b]	0	4	0	0	2	1
Refueling Trucks On-Site	0	0	0	0	0	0
Refueling Trucks Off-Site [b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	6	23	46	0	2	1
Trucks Off-Site [b]	6	24	115	0	10	4
CHE	5	400	56	0	3	3
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	1	23	2	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	19	1,192	135	1	9	6
Total - Project Year 2016 [d]	**82**	**1,996**	**1,207**	**3**	**68**	**35**
CEQA Impacts						
CEQA Baseline Emissions	140	1,958	2,175	21	178	84
Proposed Project minus CEQA Baseline	-58	38	-968	-18	-109	-49
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2023						
Locomotives On-Site	1	6	28	0	1	1
Locomotives Off-Site [b]	20	91	708	1	10	10
Trucks On-Site	12	45	61	0	12	3
Trucks Off-Site [b]	6	22	55	0	11	4
Railyard Equipment	8	296	4	0	0	0
TRU	0	0	0	0	0	0
Employee Commute On-Site	0	0	0	0	0	0
Employee Commute Off-Site [b]	0	5	0	0	4	1
Refueling Trucks On-Site	0	0	0	0	0	0
Refueling Trucks Off-Site [b]	0	0	0	0	0	0
Alternate Business Location Sources						
Trucks On-Site	6	25	27	0	2	1
Trucks Off-Site [b]	5	18	46	0	10	3
CHE	4	234	49	0	3	3
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	0	14	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	14	662	73	1	8	5
Total - Project Year 2023 [d]	**76**	**1,420**	**1,054**	**3**	**71**	**33**
CEQA Impacts						
CEQA Baseline Emissions	140	1,958	2,175	21	178	84
Proposed Project minus CEQA Baseline	-64	-537	-1,122	-18	-107	-52

Source Category	Average Daily Emissions (lb/day)[a, e]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2035						
Locomotives On-Site	1	9	29	0	1	0
Locomotives Off-Site[b]	21	169	793	3	11	11
Trucks On-Site	38	150	197	1	41	12
Trucks Off-Site[b]	18	66	163	1	36	12
Railyard Equipment	8	937	9	0	0	0
TRU	0	0	0	0	0	0
Employee Commute On-Site	0	1	0	0	1	0
Employee Commute Off-Site[b]	0	15	1	0	12	3
Refueling Trucks On-Site	0	1	1	0	0	0
Refueling Trucks Off-Site[b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	6	25	26	0	2	1
Trucks Off-Site[b]	5	17	42	0	10	3
CHE	3	231	14	0	1	1
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site[b]	0	12	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses[c]	13	656	58	1	7	4
Total - Project Year 2035[d]	**113**	**2,290**	**1,337**	**6**	**132**	**50**
CEQA Impacts						
CEQA Baseline Emissions	140	1,958	2,175	21	178	84
Proposed Project minus CEQA Baseline	-27	332	-838	-15	-46	-34
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2046						
Locomotives On-Site	1	9	19	0	0	0
Locomotives Off-Site[b]	14	158	484	3	7	6
Trucks On-Site	38	150	217	1	41	12
Trucks Off-Site[b]	18	65	188	1	36	12
Railyard Equipment	8	938	10	0	0	0
TRU	0	0	0	0	0	0
Employee Commute On-Site	0	1	0	0	1	0
Employee Commute Off-Site[b]	0	14	1	0	12	3
Refueling Trucks On-Site	0	1	1	0	0	0
Refueling Trucks Off-Site[b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	6	25	26	0	2	1
Trucks Off-Site[b]	5	17	44	0	10	3
CHE	3	232	14	0	1	1
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site[b]	0	12	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses[c]	13	663	60	1	7	4
Total - Project Year 2046[d]	**105**	**2,286**	**1,067**	**6**	**127**	**46**
CEQA Impacts						

Source Category	Average Daily Emissions (lb/day)[a, e]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
CEQA Baseline Emissions	140	1,958	2,175	21	178	84
Proposed Project minus CEQA Baseline	-35	328	-1,109	-16	-51	-38
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2066						
Locomotives On-Site	1	9	19	0	0	0
Locomotives Off-Site [b]	14	158	484	3	7	6
Trucks On-Site	38	150	217	1	41	12
Trucks Off-Site [b]	18	65	188	1	36	12
Railyard Equipment	8	938	10	0	0	0
TRU	0	0	0	0	0	0
Employee Commute On-Site	0	1	0	0	1	0
Employee Commute Off-Site [b]	0	14	1	0	12	3
Refueling Trucks On-Site	0	1	1	0	0	0
Refueling Trucks Off-Site [b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	6	25	26	0	2	1
Trucks Off-Site [b]	5	17	44	0	10	3
CHE	3	232	14	0	1	1
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	0	12	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	13	663	60	1	7	4
Total - Project Year 2066 [d]	**105**	**2,286**	**1,067**	**6**	**127**	**46**
CEQA Impacts						
CEQA Baseline Emissions	140	1,958	2,175	21	178	84
Proposed Project minus CEQA Baseline	-35	328	-1,109	-16	-51	-38
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

a) Emissions represent annual emissions divided by 360 days per year of operation.
b) Truck, train, and worker commute emissions include transport within the South Coast Air Basin.
c) Given the absence of specific site locations where the displaced businesses would move to, only on-site emissions from businesses displaced by the Project could be reasonably estimated.
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 analysis was prepared.

Table 3.2-26 summarizes estimated peak daily unmitigated emissions for the operation of the proposed Project in years 2016, 2023, 2035, 2046, and 2066. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the facility and alternate business locations. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently if ever and are based upon a theoretical set of the most conservative assumptions. Comparisons to the peak daily CEQA baseline emissions are presented to determine CEQA significance.

Table 3.2-26. Peak Daily Operational Emissions without Mitigation– Proposed Project.

Source Category	Peak Daily Emissions (lb/day) [a, e]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Project Year 2016						
Locomotives On-Site	1	5	28	0	1	1
Locomotives Off-Site [b]	24	79	757	1	14	13
Trucks On-Site	12	42	84	0	9	3
Trucks Off-Site [b]	7	27	105	0	9	3
Railyard Equipment	12	339	25	0	1	1
TRU	1	12	11	0	0	0
Employee Commute On-Site	0	0	0	0	0	0
Employee Commute Off-Site [b]	0	4	0	0	2	1
Refueling Trucks On-Site	0	0	0	0	0	0
Refueling Trucks Off-Site [b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	7	26	52	0	2	1
Trucks Off-Site [b]	7	26	128	0	11	4
CHE	5	447	63	0	3	3
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	1	23	2	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	22	1,334	151	1	10	6
Total - Project Year 2016 [d]	**99**	**2,367**	**1,407**	**3**	**74**	**39**
CEQA Impacts						
CEQA Baseline Emissions	157	2,180	2,458	21	192	91
Proposed Project minus CEQA Baseline	-58	187	-1,051	-18	-117	-52
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2023						
Locomotives On-Site	1	7	31	0	1	1
Locomotives Off-Site [b]	24	124	821	1	11	10
Trucks On-Site	13	51	69	0	13	4
Trucks Off-Site [b]	6	24	61	0	12	4
Railyard Equipment	14	443	26	0	1	1
TRU	2	16	11	0	0	0
Employee Commute On-Site	0	0	0	0	0	0
Employee Commute Off-Site [b]	0	5	0	0	4	1
Refueling Trucks On-Site	0	0	0	0	0	0
Refueling Trucks Off-Site [b]	0	0	0	0	0	0
Alternate Business Location Sources						
Trucks On-Site	7	28	30	0	2	1
Trucks Off-Site [b]	5	20	51	0	11	4
CHE	4	262	55	0	3	3
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	0	14	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	15	741	82	1	8	5
Total - Project Year 2023 [d]	**93**	**1,736**	**1,240**	**4**	**77**	**36**
CEQA Impacts						
CEQA Baseline Emissions	157	2,180	2,458	21	192	91
Proposed Project minus CEQA Baseline	-65	-444	-1,219	-18	-115	-55

Source Category	Peak Daily Emissions (lb/day) [a, e]					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2035						
Locomotives On-Site	1	11	33	0	1	1
Locomotives Off-Site [b]	25	227	916	3	12	11
Trucks On-Site	42	168	221	1	46	13
Trucks Off-Site [b]	20	73	183	1	40	14
Railyard Equipment	14	1,161	32	0	1	1
TRU	2	16	11	0	0	0
Employee Commute On-Site	0	1	0	0	1	0
Employee Commute Off-Site [b]	0	15	1	0	12	3
Refueling Trucks On-Site	0	1	1	0	0	0
Refueling Trucks Off-Site [b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	7	28	29	0	2	1
Trucks Off-Site [b]	5	19	47	0	11	4
CHE	3	258	15	0	1	1
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	0	12	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	14	735	65	1	7	4
Total - Project Year 2035 [d]	**134**	**2,724**	**1,557**	**7**	**144**	**55**
CEQA Impacts						
CEQA Baseline Emissions	157	2,180	2,458	21	192	91
Proposed Project minus CEQA Baseline	-23	544	-901	-15	-48	-36
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2046						
Locomotives On-Site	1	10	21	0	0	0
Locomotives Off-Site [b]	16	211	557	3	7	6
Trucks On-Site	42	168	243	1	46	13
Trucks Off-Site [b]	20	73	211	1	40	14
Railyard Equipment	14	1,161	32	0	1	1
TRU	2	16	11	0	0	0
Employee Commute On-Site	0	1	0	0	1	0
Employee Commute Off-Site [b]	0	14	1	0	12	3
Refueling Trucks On-Site	0	1	1	0	0	0
Refueling Trucks Off-Site [b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	7	28	29	0	2	1
Trucks Off-Site [b]	5	19	50	0	11	4
CHE	3	260	16	0	1	1
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	0	12	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	15	742	67	1	7	4
Total - Project Year 2046 [d]	**125**	**2,717**	**1,241**	**6**	**140**	**51**
CEQA Impacts						

Source Category	Peak Daily Emissions (lb/day) [a, e]					
	VOC	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
CEQA Baseline Emissions	157	2,180	2,458	21	192	91
Proposed Project minus CEQA Baseline	-32	537	-1,217	-15	-52	-40
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
Project Year 2066						
Locomotives On-Site	1	10	21	0	0	0
Locomotives Off-Site [b]	16	211	557	3	7	6
Trucks On-Site	42	168	243	1	46	13
Trucks Off-Site [b]	20	73	211	1	40	14
Railyard Equipment	14	1,161	32	0	1	1
TRU	2	16	11	0	0	0
Employee Commute On-Site	0	1	0	0	1	0
Employee Commute Off-Site [b]	0	14	1	0	12	3
Refueling Trucks On-Site	0	1	1	0	0	0
Refueling Trucks Off-Site [b]	0	0	1	0	0	0
Alternate Business Location Sources						
Trucks On-Site	7	28	29	0	2	1
Trucks Off-Site [b]	5	19	50	0	11	4
CHE	3	260	16	0	1	1
Employee Commute On-Site	0	1	0	0	0	0
Employee Commute Off-Site [b]	0	12	1	0	10	3
Alternate Business Location Locomotive Activities	0	0	0	0	0	0
Displaced Businesses [c]	15	742	67	1	7	4
Total - Project Year 2066 [d]	**125**	**2,717**	**1,241**	**6**	**140**	**51**
CEQA Impacts						
CEQA Baseline Emissions	157	2,180	2,458	21	192	91
Proposed Project minus CEQA Baseline	-32	537	-1,217	-15	-52	-40
Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day operations of the facility.
b) Truck, train, and worker commute emissions include transport within the South Coast Air Basin.
c) Given the absence of specific site locations where the displaced businesses would move to, only on-site emissions from businesses displaced by the Project could be reasonably estimated.
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 the proposed Project operations include the following conservative assumptions that were chosen to identify a maximum theoretical activity scenario:

- 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. The peak day truck trips generated by the proposed Project are greater than the average day truck trips by a factor of approximately 1.12.

- Locomotives: Peak day locomotive trips were assumed to be equivalent to the average daily trips due to the physical constraints on the number of train trips in a single day that the facility can accommodate. Peak locomotive emission factors were derived by assuming a ratio of the peak day locomotive fleet mix average emissions factor in 2010, to the average day locomotive fleet mix average emissions factor in 2010 to develop a peaking factor. The peaking factor was then applied to all future year average day on-site locomotive emissions to estimate peak day locomotive emissions. The on-site emergency generator was assumed to operate for 24 hours on the peak day.
- TRUs were assumed to operate 24 hours on the peak day.
- The peak daily activities for all other sources were assumed to be equivalent to their average daily activities.

Impact Determination

The CEQA increments presented in Tables 3.2-25 and 3.2-26 are below the significance thresholds for VOC, CO, NOx, SOx, PM_{10} and $PM_{2.5}$ for all analysis years. Therefore the unmitigated Project would have less than significant impacts under AQ-3.

The proposed Project has a number of environmental features built into the project design which reduce operational emissions. In addition, the future year operational emissions of the Project are affected by a number of regulations and agreements that would reduce the future year operational emissions.

Table 3.2-8 summarizes regulatory requirements that were included in the unmitigated Project operational emissions. Table 3.2-27 details how various Project features compare to emissions reduction measures identified in the San Pedro Bays Ports CAAP. CAAP measure RL-1 is not included in the table because it applies specifically to Pacific Harbor Line's switcher locomotive fleet, and measure RL-3 is recommended as a Project Condition and described further in Section 3.2.5.

Table 3.2-27. Comparison between San Pedro Bay Ports CAAP Control Measures and Proposed Project Features.

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	Project Feature	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 NOx at time of replacement. Semi-frequent caller container trucks MY1993-2003 will be equipped with the maximum CARB verified emissions reduction technologies currently available.	All trucks which provide drayage services between the port terminals (Port of Los Angeles and Port of Long Beach) and the SCIG facility will meet the requirements of the CAAP HDV-1 measure.	

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	Project Feature	Discussion
HDV-2	Alternative Fuel Infrastructure for Heavy-Duty Natural Gas Vehicles	Construct LNG or compressed natural gas (CNG) refueling stations.	No applicable project feature.	A public LNG and CNG fueling and maintenance facility was construction by Clean Energy and has been operational since March 2009.
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 NOx. All remaining CHE less than 750 hp will meet at a minimum the Tier 4 standards for PM and NOx by 2012. Requires that all remaining CHE greater than 750 hp to meet Tier 4 standards for PM and NOx by 2014 and prior to that, be equipped with the cleanest available Verified Diesel Emissions Control (VDEC).	Yard tractors operating at the SCIG facility would meet Tier 4 non-road engine emission standards, using LNG-powered models or an equivalent low-emission technology. SCIG would utilize electric wide-span rail-mounted gantry (RMG) cranes, which exceed the requirements for CHE to meet Tier 4 non-road engine emissions standards.	
RL-2	Existing Class 1 Railroad Operations	Affects Class 1 railroad operations on Port property. Lays out stringent goals for switcher, helper, and line-haul locomotives operating on Port properties. By 2010, all diesel-powered Class 1 locomotives entering Port facilities will meet emissions equivalent to Tier 2 locomotive standards. By 2023, all Class I locomotives entering the ports will meet emissions equivalent to Tier 3 locomotive standards.	Project switcher locomotives will use low-emission technology, such as non-road engine generator sets or an emissions-equivalent technology. Linehaul locomotives visiting the Project site would meet or exceed the fleet-wide average of Tier 3 equivalent emission standard. Linehaul locomotives visiting the Project site would use automatic engine start/stop (AESS) devices to limit idling to 15 minutes. All linehaul and switcher locomotives operating at SCIG would use ULSD fuel.	

Mitigation Measures

No mitigation measures are required to mitigate operational emission impacts under Impact AQ-3.

Residual Impacts

No residual impacts.

Impact AQ-4: The Project operations would result in offsite ambient air pollutant concentrations that would exceed a SCAQMD threshold of significance in Table 3.2-12.

Dispersion modeling of onsite and offsite Project operational emissions was performed to assess the impact of the Project on local offsite air concentrations. A screening method, which results in conservative predictions of concentrations from project operational emissions, was used. For instance, rather than modeling each analysis year to identify the maximum pollutant concentrations, a single composite emissions scenario was modeled as a conservative approach. The composite emissions scenario is a combination of the peak year (for the annual NO_2 and PM_{10} concentration thresholds), peak day (for the 24-hour SO_2, PM_{10}, and $PM_{2.5}$ concentration thresholds), or peak hour (for the 1-hour NO_2, 1-hour and 8-hour CO, and 1-hour SO_2 concentration thresholds) emissions within the modeling domain by source category. Note that the peak year or day emissions for a particular source category may not necessarily occur in the same year or day as the other categories.

The EPA dispersion model AERMOD, version 09292, was used to predict maximum ambient pollutant concentrations at or beyond the proposed Project site. A summary of the dispersion modeling results is presented here, and the complete dispersion modeling report is included in Appendix C2.

Tables 3.2-28 and 3.2-29 present the maximum offsite ground level concentrations of criteria pollutants estimated for the Project operations, including alternate business locations operations, without mitigation. Table 3.2-28 indicates that the maximum 1-hour NO_2 concentration, 1,047 $\mu g/m^3$, would exceed the SCAQMD significance threshold of 338 $\mu g/m^3$. The annual NO_2 concentration, 67 $\mu g/m^3$, would exceed the SCAQMD significance threshold of 56 $\mu g/m^3$. The 98th percentile 1-hour NO_2 concentration, 944 $\mu g/m^3$, would also exceed the national ambient air quality standard (NAAQS) of 189 $\mu g/m^3$, a standard not yet adopted as a threshold of significance by SCAQMD. The NAAQS standard is based on the 8th highest daily maximum. Figures 3.2-2 to 3.2-3 show the regions where the 1-hour and annual ground level NO_2 concentrations for the unmitigated Project exceed the significance thresholds.

Table 3.2-28. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Operation of the Project.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project	Background Concentration[b]	Total Ground Level Concentration[a]	SCAQMD Threshold
		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
NO_2 [c]	1-hour	745	245	**990**	338
	1-hour [d]	518	142	**660**	(189)[f]
	Annual	27	40	**67**	56
CO	1-hour	1,531	5,842	7,373	23,000
	8-hour	639	4,467	5,106	10,000
SO_2	1-hour	1.9	236	238	655
	1-hour [e]	1.9	51	53	(196)[f]
	24-hour	0.3	31	32	105

a) Exceedances of the thresholds are indicated in bold. Modeled concentrations of NO_2 , SO_2, and CO are absolute unmitigated Project concentrations.
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.
c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.
d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years2008, 2009, and 2010.
e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
f) A standard not yet adopted as a threshold of significance by SCAQMD as the SCAB is in attainment.

Table 3.2-29. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Project.

Pollutant	Averaging Time	Maximum Modeled Concentration of Unmitigated Project[b]	Maximum Modeled Concentration of CEQA Baseline[b]	Ground-Level Concentration CEQA Increment[a,b,c]	SCAQMD Threshold
		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)
PM_{10}	24-hour	15.0	6.5	**9.1**	2.5
	Annual	7.7	1.7	**6.2**	1.0
$PM_{2.5}$	24-hour	5.3	3.8	**4.5**	2.5

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 unmitigated Project concentration.
c) The CEQA Increment represents operation of the unmitigated proposed Project minus CEQA baseline.

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

The maximum 1-hour and 24-hour SO_2 concentrations would be below the SCAQMD significance thresholds. The 99^{th} percentile 1-hour SO_2 concentration of 53 $\mu g/m^3$ would also be below the national ambient air quality standard (NAAQS) of 196 $\mu g/m^3$, a standard not yet adopted as a threshold of significance by SCAQMD.

Table 3.2-29 indicates that the maximum 24-hour PM_{10} concentration of 9.1 $\mu g/m^3$ would exceed the SCAQMD significance threshold for operational concentrations of 2.5 $\mu g/m^3$ and that the annual PM_{10} concentration of 6.2 $\mu g/m^3$ would exceed the SCAQMD significance threshold of 1.0 $\mu g/m^3$. The maximum 24-hour $PM_{2.5}$ concentration of 4.5 $\mu g/m^3$ would exceed the SCAQMD significance threshold for operation of 2.5 $\mu g/m^3$. However, it should be noted that there are only thee receptors that are over the SCAQMD threshold for PM2.5. The maximum is located on the railroad tracks, just south of the alternate site for Fast Lane. The other two are on the newly constructed tracks which run between the alternate sites for Fast Lane and Cal Cartage. Figures 3.2-4 and 3.2-5 show the regions where the 24-hour and annual ground level PM_{10} concentrations for the unmitigated Project minus baseline exceeds the significance thresholds. Figure 3.2-6 shows the regions where the 24-hour ground level $PM_{2.5}$ concentration for the unmitigated Project minus baseline exceeds the significance thresholds.

Figure 3.2-2. 1-hour NO2 Ground-Level Concentration for Unmitigated Project Plus Background.

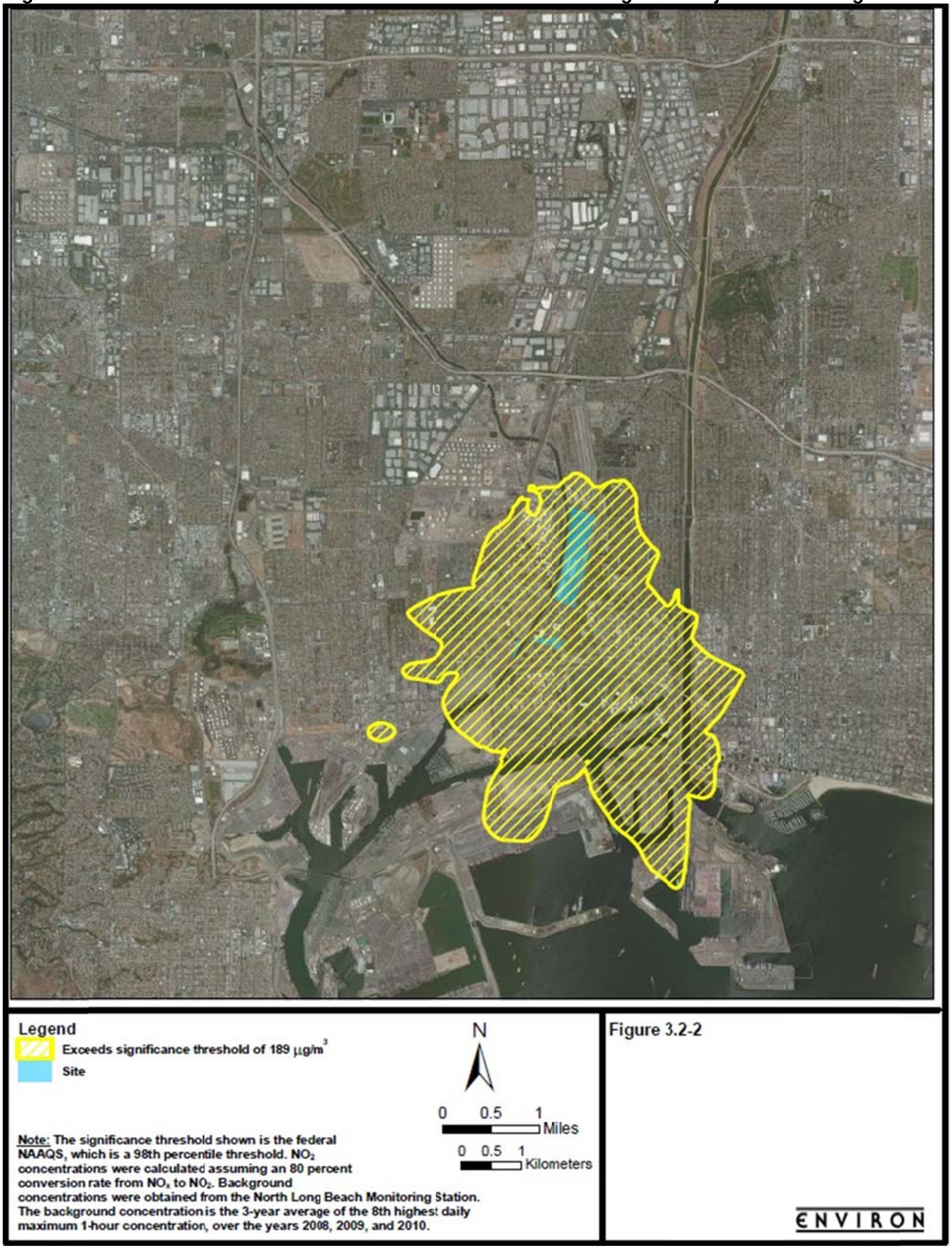


Figure 3.2-3. Annual NO2 Ground-Level Concentration for Unmitigated Project Plus Background.

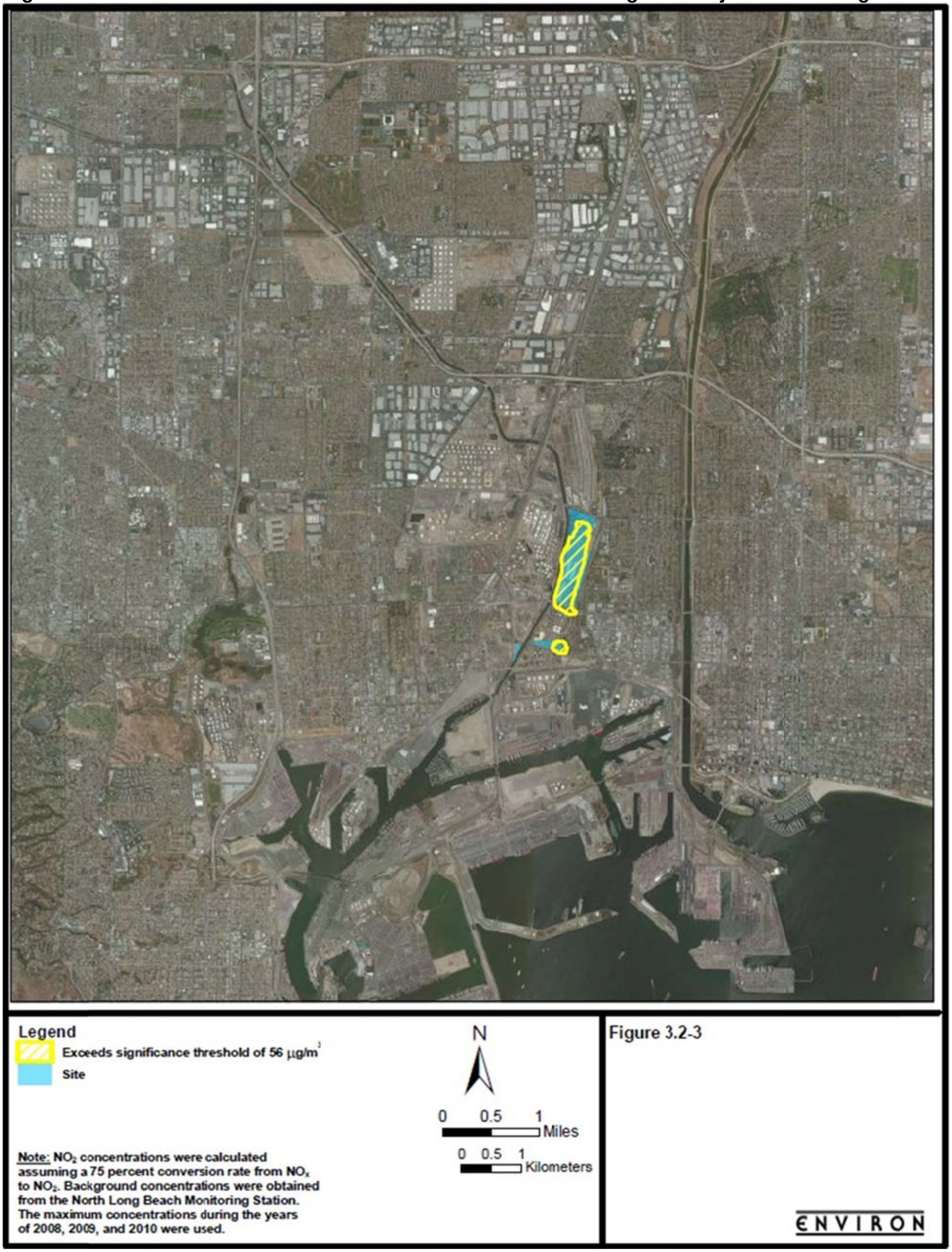


Figure 3.2-4. 24-Hour PM10 Ground-Level Concentration for Unmitigated Project Minus Baseline.

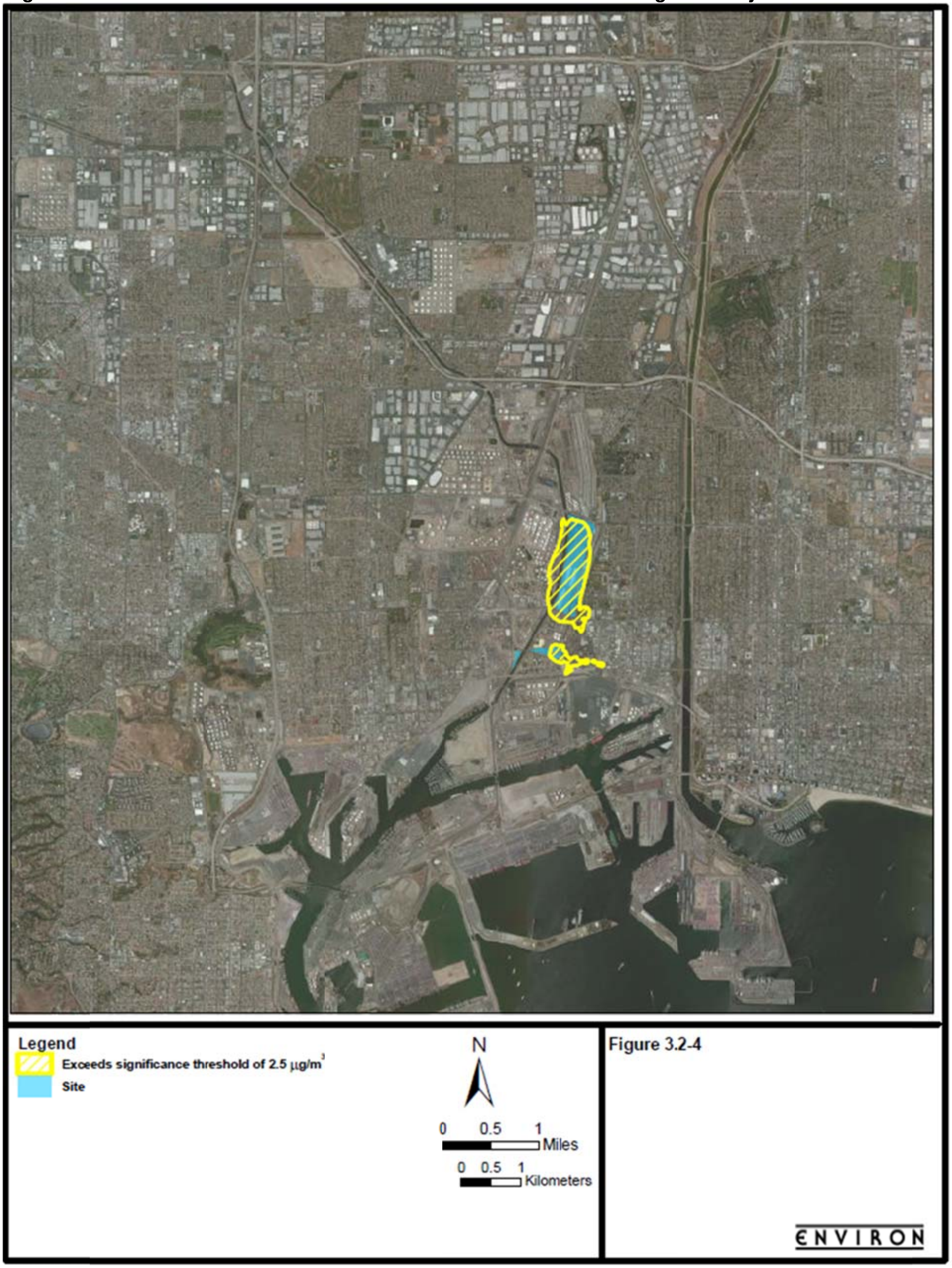


Figure 3.2-5. Annual PM_{10} Ground-Level Concentration for Unmitigated Project Minus Baseline.

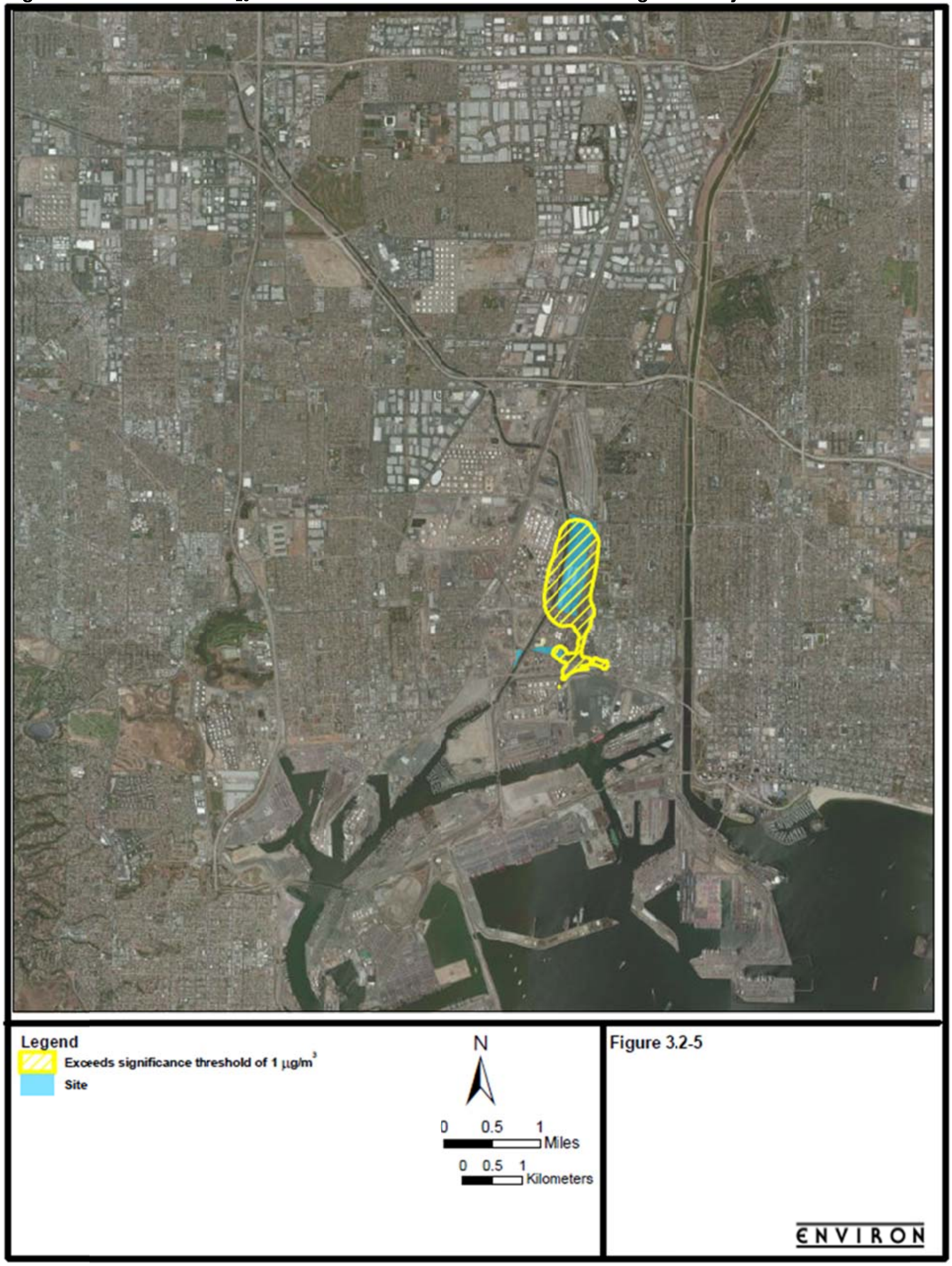
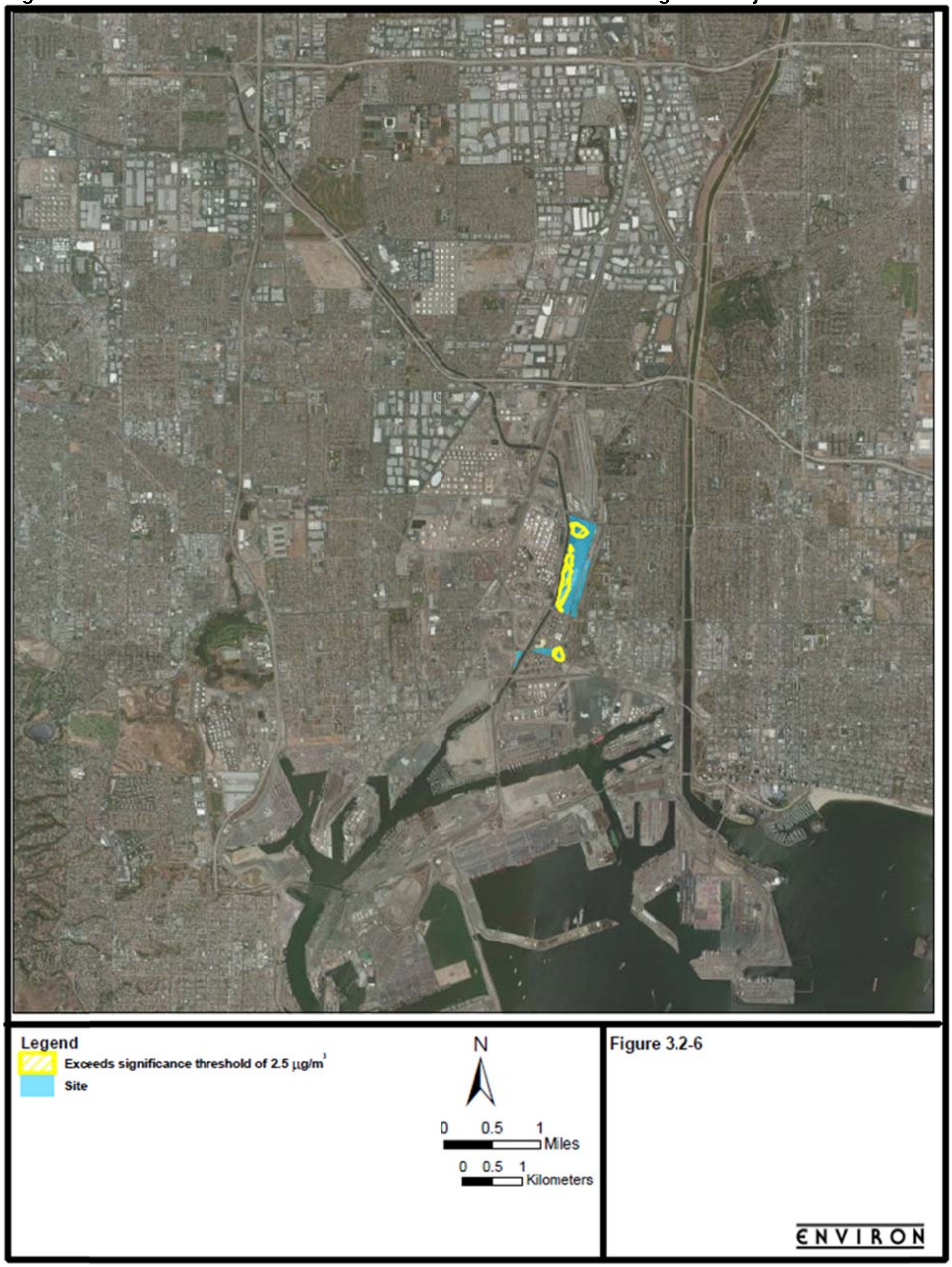


Figure 3.2-6. 24-Hour PM2.5 Ground-Level Concentration for Unmitigated Project Minus Baseline.



Impact Determination

The Project operations would exceed the SCAQMD thresholds for 1-hour and annual NO_2, 24-hour and annual PM_{10}, and 24-hour $PM_{2.5}$. It would also exceed the NAAQS for 1-hour NO_2. Therefore, the Project would have a significant impact under AQ-4.

Mitigation Measures

The mitigation measure considered for impacts related to AQ-4 is on-site sweeping to control fugitive dust PM_{10} and $PM_{2.5}$ emissions at the SCIG facility only (**MM AQ-7**):

MM AQ-7: On-Site Sweeping at SCIG Facility.

BNSF shall sweep the SCIG facility on-site, along routes used by drayage trucks, yard hostlers, service trucks and employee commuter vehicles, on a weekly basis using a commercial street sweeper or any technology with equivalent fugitive dust control.

This measure was analyzed by assuming that sweeping on a weekly basis would result in a 26% control of paved road fugitive dust PM_{10} and $PM_{2.5}$ emissions from on-road vehicles traveling within the SCIG facility (Countess Environmental, 2006). Tables 3.2-30 and 3.2-31 present the maximum offsite ground level concentrations of criteria pollutants estimated for the Project operations, including alternate business locations operations, with mitigation.

Table 3.2-30. Maximum Offsite NO_2, CO, and SO_2 Concentrations Associated with Operation of the Project – with Mitigation.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project	Background Concentration[b]	Total Ground Level Concentration[a]	SCAQMD Threshold
		(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)
NO_2 [c]	1-hour	745	245	**990**	338
	1-hour [d]	518	142	**660**	(189)[f]
	Annual	27	40	**67**	56
CO	1-hour	1,531	5,842	7,373	23,000
	8-hour	639	4,467	5,106	10,000
SO_2	1-hour	1.9	236	238	655
	1-hour [e]	1.9	51	53	(196)[f]
	24-hour	0.3	31	32	105

a) Exceedances of the thresholds are indicated in **bold**. Modeled concentrations of NO_2 , SO_2, and CO are absolute mitigated Project concentrations.
b) CO background concentrations are the projected future year values for Monitor 4, Long Beach, published by the SCAQMD for years 2010, 2015, and 2020 (all identical). NO_2 and SO_2 background concentrations were obtained from the North Long Beach Monitoring Station. Unless noted otherwise, the maximum concentrations during the years of 2008, 2009, and 2010 were used.
c) NO_2 concentrations were calculated assuming a 75 percent conversion rate from NOx to NO_2 for the annual averaging period and an 80 percent conversion rate from NOx to NO_2 for the 1-hour averaging period.
d) This comparison is to the federal NAAQS, which is a 98th percentile threshold. Here, the background concentration is the 3-year average of the 8th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
e) This comparison is to the federal NAAQS, which is a 99th percentile threshold. Here, the background concentration is the 3-year average of the 4th highest daily maximum 1-hour concentration, over the years 2008, 2009, and 2010.
f) A standard not yet adopted as a threshold of significance by SCAQMD as the SCAB is in attainment.

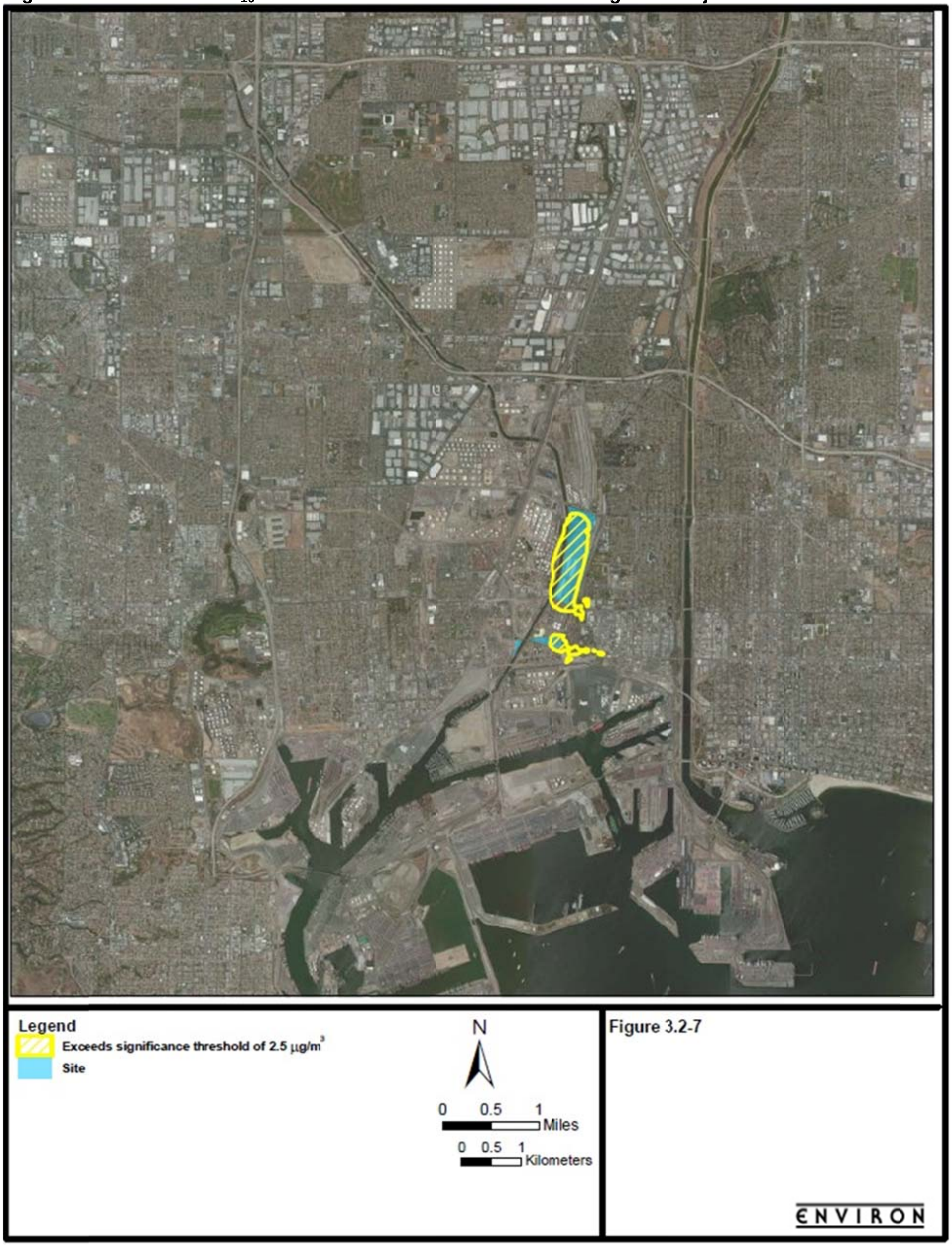
Table 3.2-31. Maximum Offsite PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Project – with Mitigation.

Pollutant	Averaging Time	Maximum Modeled Concentration of Mitigated Project[b] (μg/m³)	Maximum Modeled Concentration of CEQA Baseline[b] (μg/m³)	Ground-Level Concentration CEQA Increment[a,b,c] (μg/m³)	SCAQMD Threshold (μg/m³)
PM_{10}	24-hour	13.2	6.5	**7.3**	2.5
	Annual	6.7	1.7	**5.2**	1.0
$PM_{2.5}$	24-hour	5.3	3.8	**4.5**	2.5

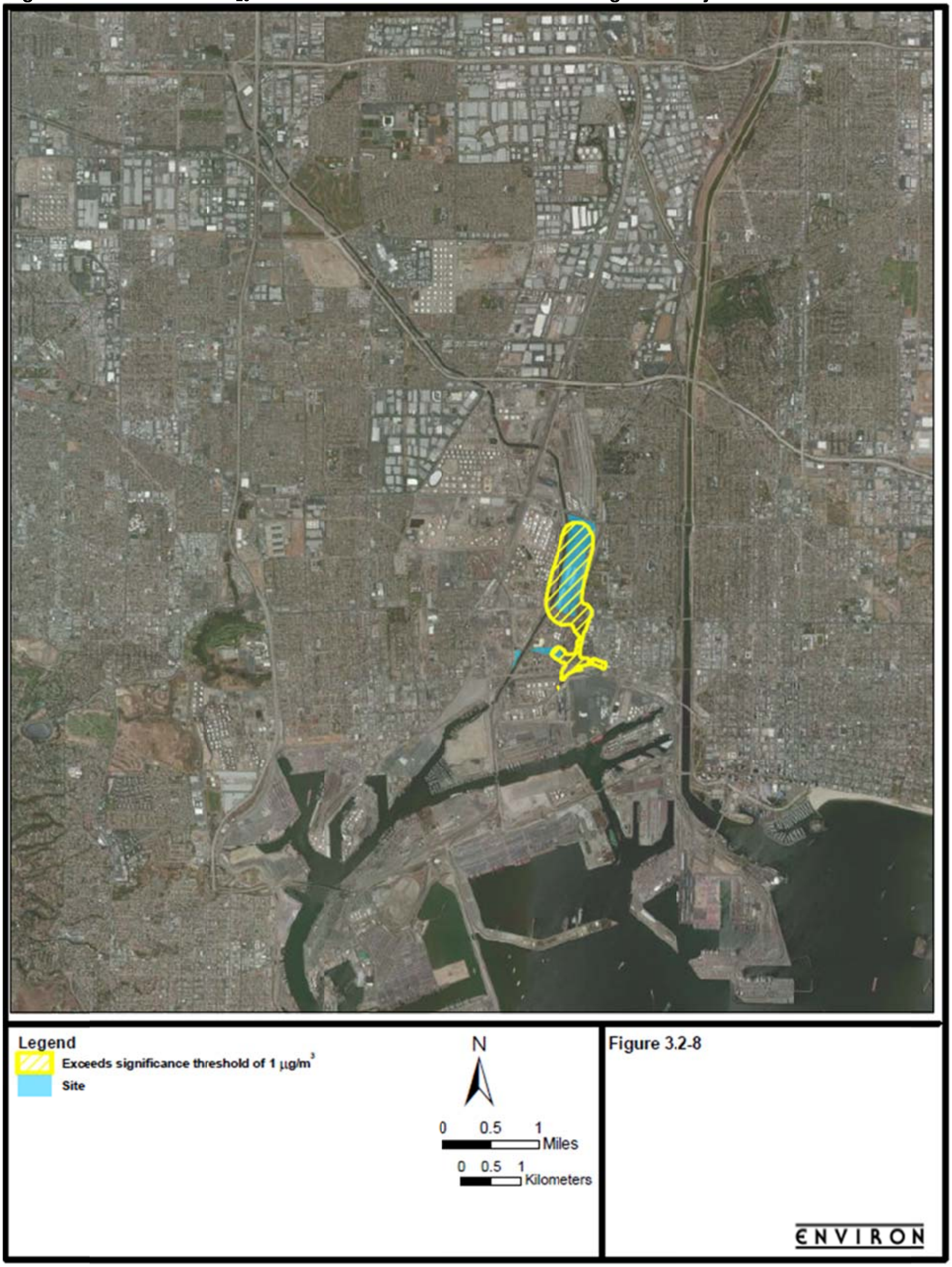
a) Exceedances of the threshold are indicated in **bold**. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the mitigated Project concentration.
c) The CEQA Increment represents operation of the mitigated proposed Project minus CEQA baseline.

Figures 3.2-7 and 3.2-8 show the regions where the 24-hour and annual ground level PM_{10} concentrations for the mitigated Proposed Project minus baseline exceed the significance thresholds. Figure 3.2-9 shows the regions where the 24-hour ground level $PM_{2.5}$ concentrations for the mitigated Proposed Project minus baseline exceed the significance thresholds.

Figure 3.2-7. 24-Hour PM_{10} Ground-Level Concentration for Mitigated Project Minus Baseline.



1 **Figure 3.2-8. Annual PM_{10} Ground-Level Concentration for Mitigated Project Minus Baseline.**



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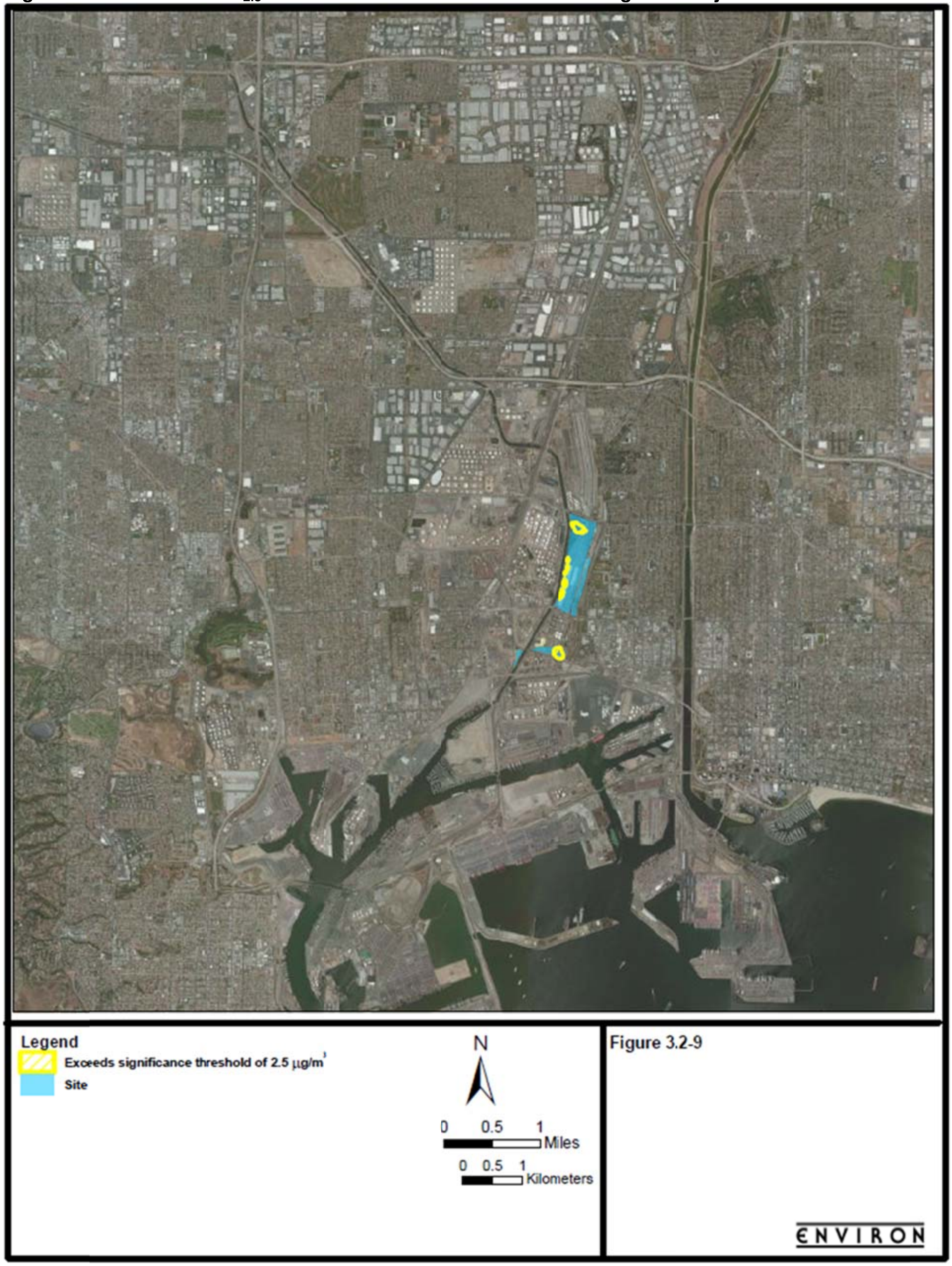
1 **Figure 3.2-9. 24-Hour $PM_{2.5}$ Ground-Level Concentration for Mitigated Project Minus Baseline.**



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Mitigation Measures Considered but Determined Infeasible

Additional mitigation measures for SCIG were considered for addressing impacts related to AQ-4, operational off-site pollutant ambient concentrations. These measures were evaluated in terms whether they were capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. The measures below (some of which were identified in comment letters on the Draft EIR) were evaluated and determined to be infeasible for consideration as enforceable mitigations:

1. Advanced Locomotive Emission Control System (ALECS) – this system, which was designed by Advanced Cleanup Technologies, Inc. (ACTI) consists of a bonnet, or hood that is placed over a locomotive's exhaust stack to capture exhaust pollutants emitted by the locomotive. The system was designed to capture locomotive emissions while the locomotive is motionless or moving slowly within the range of physical extension of the hood system. The exhaust captured by the hood is then sent to an Emission Treatment Subsystem (ETS) which uses catalytic and scrubber aftertreatment technology to eliminate pollutants from the captured exhaust of the locomotives. Although the ALECS system went through proof-of-concept testing on a limited scale at the Union Pacific (UP) Roseville Railyard (Chan M., Jackson M. D., 2007) as part of a multi-agency stakeholder process, the system was never scaled up to full implementation at a railyard as a result of a number of technical issues. Idling emissions were not determined to be a significant portion of total railyard emissions in the testing, and therefore a number of hoods and substantial range of extension would be needed to capture a reasonable fraction of emissions from multiple trains calling on a railyard. Idling emissions at SCIG are reduced through the use of Automatic Engine Start Stop (AESS) devices equipped on all linehaul locomotives, and therefore control of emissions from locomotive movement in the facility would require extensive overhead infrastructure to move the bonnet throughout the rail tracks on-site. This setup is not feasible given the physical constraints of the facility and the operation of live lifts.
2. Switching Locomotives Conducting Build/Break Activities at SCIG – an alternate operation of the facility was considered as a mitigation measure, in which low-emission switcher locomotives would conduct all breakdown and build activities at the SCIG facility. This mitigation measure was determined to be infeasible as connection of the low-emissions switcher to the locomotives would require leaving SCIG locomotives stopped on the Alameda Corridor, thus posing a traffic hazard to trains using the corridor, and would also require additional rail trackage on the SCIG site to allow the switchers to connect to the locomotives which is not feasible due to physical constraints of the SCIG site.
3. Zero-Emissions Container Movement Systems for Locomotives – this mitigation measure was considered infeasible, and a technical discussion is provided in Section 5.2.2. Zero-emission container movement systems such as maglev and linear induction have not been feasibly demonstrated for goods movement and would require significant operating costs. These technologies are also subject to some regulatory restrictions on their use. A zero-emissions demonstration program (**PC AQ-11**) is considered as a project condition, as described further under impact AQ-7 for health risk.
4. Zero-Emissions and Hybrid Trucks – this mitigation measure was considered and determined to be technically infeasible. A technical discussion is provided in Section

5.2.2. Zero emission truck technology has been studied by the Port for technical feasibility and application to Port-specific uses, including the heavy-duty drayage trucks calling on the Port terminals and the Port-specific drayage truck duty cycle (TIAX, 2011). The conclusion of the study is that this technology has not been demonstrated to adequately meet the technical requirements of Port drayage trucks for gradeability and top speed. Hybrid diesel-electric trucks are an emerging technology, and several manufacturers offer hybrid diesel-electric truck models as Class 6 or 7 heavy-duty on-road trucks (HVIP, 2011). At this time, only Peterbilt manufactures a Class 8 hybrid diesel-electric truck, but this truck model has not been tested for use in Port-specific applications or for the Port-specific drayage truck duty cycle. The Port's study of zero-emission and hybrid trucks indicate that the weight classes of hybrid truck currently available may not meet the requirements of Port drayage trucks. In addition, at this time there is insufficient data to characterize the emissions of hybrid trucks on a modal basis, including using standard testing duty cycles, Port-specific drayage truck duty cycles, or by-speed emissions. Some studies have modeled the potential benefits of hybrid diesel-electric trucks but are focused on the fuel economy benefits of the technology and have not considered the impacts of hybrids on criteria pollutant emissions (NESCCAF, ICCT, SwRI, TIAX, 2009). Without detailed data on hybrid truck emissions performance, it is not possible to model these emissions accurately for use in air quality environmental analysis. A zero-emissions demonstration program (**PC AQ-11**) is considered as a project condition, as described further under impact AQ-7 for health risk.

Residual Impacts

Mitigated proposed Project residual air quality impacts would remain significant and unavoidable for 1-hour and annual NO_2, 24-hour and annual PM_{10}, and 24-hour $PM_{2.5}$.

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.

The proposed Project would generate off-site traffic, including truck trips that could affect nearby intersections predicted to experience congestion in future years due to Port growth. Under relatively stagnant conditions with periods of near-calm winds, heavily congested intersections can produce elevated levels of carbon monoxide in their immediate vicinity. Therefore, a microscale "hot-spot" 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 Anaheim Street/E. I Street/W. 9th Street (p.m. peak) was selected for the CO analysis, as it is expected to experience congestion in future years due to Port growth. This intersection is the worst-performing intersection.

This analysis was conducted in accordance with Caltrans (1997) and the SCAQMD (2005) guidance using the CAL3QHC dispersion model. 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 derived from the transportation modeling described in Section 3.10.

Table 3.2-32 presents maximum 1-hour and 8-hour CO concentrations predicted at locations 3 meters from the edge of the intersection. These results indicate that CO concentrations would not exceed the CO standards during any Project analysis year, either with the Project or under the No Project Alternative. Despite increasing traffic volumes in the future, the modeling results show a declining trend in CO concentrations. This declining trend is due to the phasing in of 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 C4.

Table 3.2-32. Maximum Predicted CO Concentrations at the Anaheim St./E. I St/W. 9th St. Intersection – Proposed Project.

Project Year	1-hour Concentration (ppm)	8-hour Concentration (ppm)
2016	8.1	6.1
2046	7.4	5.5
2066	7.4	5.5
Most stringent standard	20	9

Notes:

a) 1-hour concentrations include a background concentration of 5.1 ppm for 2016, 2046 and 2066 (SCAQMD, 2005).

b) 8-hour concentrations include a background concentration of 3.9 for 2016, 2046 and 2066.

c) A persistence of factor 0.77 was used to estimate 8-hour concentrations from model-calculated 1-hour concentrations, with this factor derived from the ratio (8-hour/1-hour) of future background values.

d) CAL3QHC input parameters include meteorological conditions of 0.5 meters per second (m/s) wind speed, stability F, 5-degree variation of wind direction, 1,000 meter mixing height, 0 cm/sec settling and deposition velocity, and 100 cm surface roughness length (urban land-use).

e) Emission factors were derived using EMFAC2011 v2.3 for link speeds of 27 mph for all movements except the southbound approach/northbound departure, which used 25 mph in 2016, 2046 and 2066.

f) Idle emission factors for vehicle classifications not derived in the EMFAC model were calculated by multiplying the emission factor for 3 mph x 3. Cumulative idle rates used in the modeling represent weighted-average emission rates based on vehicle classification and corresponding % VMT travel fractions.

g) Model receptors were placed 3 meters (10 feet) from the roadway edge, outside the mixing zone, at setback distances of approximately 25, 50, and 100 feet from the intersection corners along each road link and 1.8 m height.

Impact Determination

The off-site traffic generated by the proposed Project would not cause ambient CO concentrations to exceed the NAAQS, the CAAQS, or the SCAQMD thresholds for 1-hour and 8-hour CO. Therefore, impacts under AQ-5 are less than significant.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-6: The proposed Project would not create objectionable odors at the nearest sensitive receptor.

Sensitive receptors include residences, board and care facilities, schools, playgrounds, hospitals, parks, childcare centers, and outdoor athletic facilities. Operation of the proposed Project would generate air pollutants due to the combustion of diesel fuel. The chemical species found in diesel exhaust include some that are known to have odors and that can result in the characteristic diesel exhaust odor with which most people are familiar. However, quantitative analysis of potential odor impacts from diesel exhaust is very difficult due to the complex mixture of chemicals in the diesel exhaust, the differing odor thresholds of these constituent species, and the difficulty quantifying the potential for changes in perceived odors even when air contaminant concentrations are known. The proposed Project would not have any major maintenance or servicing activities occurring on site that would require a hazardous material storage area and that could generate odorous pollutants. A small above-ground storage tank (AST) may be required on-site but would be permitted and would have appropriate control devices for fugitive emissions and odor. In addition, the existing industrial setting of the proposed Project facility represents an already complex odor environment. For example, existing activities on the Project site include freight and goods movement businesses that use diesel trucks and diesel cargo-handling equipment that generate similar diesel exhaust odors as would the proposed Project. Other existing industrial uses around the Project site include the Tesoro Refinery and California Sulfur Works, both of which generate different suites of odorous air pollutants that may at times be observed at sensitive receptors near the Project site. The mobile nature of most Project emission sources would help to disperse proposed Project emissions. Moreover, the distance between proposed Project emission sources and the nearest sensitive receptor is expected to be enough to allow for adequate dispersion of these emissions to below objectionable odor levels.

Within this context, the Project would be likely to result in minor changes in the overall odor environment in the vicinity. The Project will minimize emissions of diesel-generated air pollutants as described in **MM AQ-8** (low-emission trucks). Given the size and magnitude of the proposed Project in comparison with the existing industrial land uses in the immediate area, diesel exhaust resulting from the proposed Project would not change existing odor conditions in the area.

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. Therefore odor impacts under AQ-6 would be less than significant.

Mitigation Measures

Mitigation is not required.

Residual Impacts

Impacts would be less than significant.

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

Following the "Air Toxics Hot Spots Program Risk Assessment Guidelines" developed by the Office of Environmental Health Hazard Evaluation (OEHHA) within the CAL/EPA (OEHHA, 2003) and risk assessment guidance developed by the SCAQMD, POLA developed a Health Risk Assessment ("HRA") Protocol (POLA, 2008) for the SCIG Project spanning 2013-2082. The HRA was reviewed and approved by the SCAQMD. Consistent with the HRA protocol, human health risks associated with the emissions of TACs from the Project were estimated. Following risk assessment guidance for CEQA, health risks for both the Project-related emissions as well as the emissions from CEQA 2010 baseline conditions were estimated and the difference was reported as the incremental health risks associated with the Project.

The objective of the HRA process supports a determination of whether health risks posed by a project meet regulatory standards and to inform the public and decision makers of the potential health effects associated with the chemicals emitted from a project or facility. The HRA is intended to describe the objectives, methods, assumptions, results and key uncertainties associated with the health risk evaluation.

The CEQA Guidelines state that the baseline for environmental analysis is normally "the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published" (CEQA Guidelines 15125a). As explained in Section 3.2.2.3, the LAHD has determined that the time of the notice of preparation (2005) does not represent existing conditions. The significance of Air Quality impacts under CEQA are evaluated in comparison with a 2010 baseline.

Neither CEQA case law nor the CEQA Guidelines mandate a uniform, inflexible rule for determination of the existing conditions baseline. Rather, a lead agency has the discretion to decide exactly how existing physical conditions without the project can most realistically be measured. For instance, environmental conditions can vary from year to year and in some cases it may be necessary to consider conditions over a range of time periods. The *Sunnyvale West* case, and subsequent decision, *Pfeiffer* and *Neighbors for Smart Rail*, make clear that CEQA review which includes comparison to the static CEQA baseline may also include discussions of foreseeable changes and expected future conditions, where such an analysis is helpful to an intelligent understanding of the project's environmental impacts.

The Project's Cancer Risk impacts would differ if compared to the CEQA 2010 existing conditions baseline versus if compared against expected future conditions surrounding the Project (the “floating baseline”). Therefore, to fully apprise the public and decision makers of the Project's environmental impacts, this document compares the Project's health risk impacts against both the CEQA 2010 existing conditions baseline and the floating or future baseline. The floating baseline used for analysis of the Project's health risk impacts incorporate the effects of reduced emissions that would result from planned future air quality regulations, but assumes that activities of existing businesses remain at baseline levels. The HRA is presented in comparison against the floating baseline, and feasible mitigation measures and/or project conditions are considered to address impacts.

The period 2013-2082 is the 70-year exposure period with the greatest combined DPM emissions from the Project construction and operation. In addition, the HRA evaluated the cancer impact of project emissions to workers based on average emissions calculated over a 40-year period (years 2013 to 2052) and evaluated the cancer impact to students based on peak annual emissions for an exposure duration of six years. The HRA was used to evaluate potential health impacts to the public from TACs generated by the construction and operation of the Project. Methodologies as specified in the *Air Toxics Hot Spots Program Risk Assessment Guidelines* were used to perform health risk calculations based on output from the AERMOD dispersion model (OEHHA, 2003). The residential cancer risk estimates are based on an 80th percentile breathing rate, which has been identified by OEHHA and the CARB as providing health-protective estimates of exposure and risk for residential receptors (CARB, 2003). The complete HRA report is included in Appendix C3 of this EIR.

The main sources of TACs from Project operations are DPM emissions from SCIG offsite and onsite trucks, locomotives, construction activities, and alternate business location CHE and offsite and onsite trucks. 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 non-diesel sources (such as alternative fuel engines) were also evaluated in the HRA, although their impacts were minor in comparison to DPM. All TACs from CARB-based speciation profiles which had a toxicity value from OEHHA (2012) or USEPA (2012) were evaluated in the HRA. The HRA evaluated three principal health effect endpoints: individual lifetime cancer risk, chronic non-cancer effects, and acute non-cancer effects.

Individual lifetime cancer risk represents the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen. For cancer risk, exposures are evaluated and averaged over an assumed lifetime of 70-years, which is consistent with standard risk assessment methodology (OEHHA, 2003). While residential receptors are assumed to be exposed to Project emissions during the assumed lifetime (i.e., 70 years), exposures to the other receptor populations evaluated in this HRA are assumed to extend over a shorter timeframe (e.g., off-site workers exposed for a 40-year period). The HRA also calculated cancer burden, which is the estimated theoretical number of additional cancer cases for a population exposed over a 70-year period to incremental project emissions (OEHHA, 2003). Consistent with SCAQMD CEQA significance thresholds (SCAQMD, 2011), cancer burden is calculated for areas impacted by project-related increased cancer risks greater than or equal to one in a million.

Chronic and acute non-cancer effects are evaluated by calculating a hazard index (HI). The HI is the sum of individual acute or chronic hazard quotients (HQ) calculated for each substance. A HQ is the estimated ground level concentration of a TAC divided by the REL. RELs are developed by OEHHA (2012) and represent the concentration of a TAC at or below which no adverse health effects are expected. A chronic non-cancer HI below 1.0, or an acute HI below 1.0 indicates that adverse non-cancer health effects from long-term or short-term exposure, respectively, are not expected. For the evaluation of acute noncancer health effects, the one-hour maximum average air concentration of each TAC over the period of assumed exposure is used. Conservatively, the acute exposure concentration was selected as the maximum average concentration from any single hourly period during construction and operation of the project. For the evaluation of chronic noncancer health effects, this EIR used a similarly conservative approach in that the exposure level over the entire exposure duration for each exposure scenario is assumed to be the maximum annual average concentration of each TAC for any single year over the period of exposure.

For the determination of significance under CEQA, the HRA determined the incremental change in health effect endpoints due to the Project by estimating the net change in impacts between the Project and floating baseline conditions. The estimates of incremental cancer risk, chronic HI, acute HI, and cancer burden (Project minus floating baseline) were compared to the significance thresholds for health risk described in Section 3.2.4.2.

Health Effects of PM

For purposes of evaluating morbidity and mortality of DPM, OEHHA recommends using the concentration-response functions developed for urban particulate matter (i.e., PM_{10}.) The Project would emit DPM during Project construction and operation. OEHHA considers the toxicity of DPM to be the same as PM, thus the following discussion addresses potential health effects associated with DPM emissions. POLA's approach for evaluating the potential health impacts of DPM is also summarized.

Particulate matter small enough to be inhaled and retained by the lungs is a public health concern. These respirable particles (particulate matter less than about 10 micrometers in diameter [PM_{10}] and particulate matter less than 2.5 micrometers in diameter [$PM_{2.5}$]) can accumulate in the respiratory system or penetrate into the vascular system, causing or aggravating diseases such as asthma, bronchitis, lung disease, and cardiovascular disease. Children, the elderly, and the ill are believed to be especially vulnerable to adverse health effects of PM_{10} and $PM_{2.5}$.

Numerous studies have been published over the past 15 years that have established a strong correlation between the inhalation of ambient PM and an increased incidence of premature mortality from heart and/or lung diseases (Pope et al., 1995, 2002; 2004; Jerrett et al. 2005; Krewski et al., 2001; Gauderman et al., 2007). Asthma onset, or the exacerbation of existing disease, have also been linked to PM exposure (Pandaya et al., 2002; Jerrett et al., 2008; Clark et al., 2010).

In 2008, the CARB conducted an in-depth analysis of premature mortality related to $PM_{2.5.}$ exposures (CARB, 2008) and identified a concentration-response relationship for $PM_{2.5.}$ of a 10% increase in premature mortality for every 10 μg/m^3 increase in long-term exposure to $PM_{2.5}$. In 2009, the US EPA conducted a risk assessment of premature mortality from $PM_{2..5}$ exposure as part of the agency's review of the NAAQS. The USEPA (2010) reported evidence linking long-term PM exposure to all-cause mortality, cardiopulmonary mortality, and ischemic heart disease (a specific category of cardiopulmonary disease). Using the data and methodology of the EPA, CARB estimated that the annual number of $PM_{2.5}$-related premature deaths in California is 9,200 with an uncertainty range of 7,300 –11,000 (CARB, 2010b).

Quantifying Mortality and Morbidity

The Port has previously included analyses of PM-related mortality in the TraPac, China Shipping, and San Pedro Waterfront EIRs. The latter two documents utilized a methodology published by CARB (2006c), while noting that the CARB method was primarily developed for large geographic areas such as air basins or the entire state as distinct from the much smaller areas expected to be impacted by projects. The methods used to evaluate mortality and morbidity is rapidly evolving and includes the adoption of new methods by CARB.

Notwithstanding the uncertainties introduced by applying PM-related mortality calculations to a smaller geographic area, the Port has received requests from individuals, groups, and agencies to include separate quantitative assessments of project-related PM-attributable mortality in their CEQA analyses. Recently, the CARB requested that morbidity effects also be quantified in future POLA CEQA documents. In response to these requests POLA developed a methodology to calculate morbidity and mortality from project emissions (see Appendix C3 for the complete methodology). The methodology follows the approach taken by CARB (2002), while utilizing the current concentration-response relationship for mortality identified in CARB (2008) and the concentration-response relationships for morbidity endpoints in CARB (2002). The morbidity endpoints identified in the POLA methodology (Appendix C3) are as follows:

- Hospital admissions for chronic obstructive pulmonary disease
- Hospital admissions for pneumonia
- Hospital admissions for cardiovascular disease
- Acute bronchitis

- Hospital admissions for asthma
- Emergency Room visits for asthma
- Asthma attacks
- Lower respiratory symptoms
- Work loss days
- Minor restricted activity days

No CEQA significance thresholds have been identified for premature mortality or morbidity by any state or local regulatory agency. As specified in Appendix C3, POLA has determined that morbidity and mortality will be calculated if when the operation of the Project would result in off-site 24-hour $PM_{2.5}$ concentrations that exceed the 24-hour $PM_{2.5}$ SCAQMD significance criterion of 2.5 μg/m^3. The geographic area of analysis for the morbidity and mortality calculations is all census blocks partially or fully within the 2.5 μg/m^3 $PM_{2.5}$ peak daily concentration isopleths for the Project minus baseline. This approach is consistent with the significant impact threshold identified by the SCAQMD for $PM_{2.5}$.

Since the adoption of the POLA/POLB methodology for evaluating morbidity and mortality, CARB has updated their approach to estimating premature death associated with exposure to fine particulate matter (CARB, 2010b). In their updated methodology, CARB relies on the current methods outlined by USEPA (2010) in *Quantitative Health Risk Assessment for Particulate Matter*, from which CARB integrated several key factors. Three key elements of this updated approach include: a) limiting the evaluation to cardiovascular disease-related mortality, b) adoption of an annual average $PM_{2.5}$ threshold concentration of 5.8 μg/m^3 ("CARB $PM_{2.5}$ threshold") for quantifying mortality, and c) revision of the coefficient used to relate mortality to changes in $PM_{2.5}$ concentrations.

Estimated Risk and Cancer Impact

Table 3.2-33 presents the maximum predicted health impacts associated with the Project. The table includes estimates of individual lifetime cancer risk, chronic non-cancer HI, and acute non-cancer HI at the maximally exposed residential, occupational, sensitive, student, and recreational receptors (the maximum exposed individual, or MEI). Results are presented for the Project minus floating baseline and the Project minus CEQA 2010 existing conditions baseline.

Table 3.2-33. Maximum Health Impacts Associated with the Unmitigated Project.

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Project	CEQA 2010 Baseline	CEQA 2010 Increment	Floating Baseline	Floating CEQA Increment	
Cancer Risk	Residential	31 x 10^{-6} (31 in a million)	68 x 10^{-6} (68 in a million)	1.2 x 10^{-6} (1.2 in a million)	34 x 10^{-6} (34 in a million)	**20 x 10^{-6} (20 in a million)**	10 x 10^{-6} (10 in a million)
	Occupational	24 x 10^{-6} (24 in a million)	51 x 10^{-6} (51 in a million)	9.4 x 10^{-6} (9.4 in a million)	21 x 10^{-6} (21 in a million)	**13 x 10^{-6} (13 in a million)**	
	Sensitive	30 x 10^{-6} (30 in a million)	45 x 10^{-6} (45 in a million)	0.5 x 10^{-6} (0.5 in a million)	20 x 10^{-6} (20 in a million)	**16 x 10^{-6} (16 in a million)**	
	Student	2.2 x 10^{-6} (2.2 in a million)	0.9 x 10^{-6} (0.9 in a million)	1.3 x 10^{-6} (1.3 in a million)	0.3 x 10^{-6} (0.3 in a million)	1.9 x 10^{-6} (1.9 in a million)	
	Recreational	39 x 10^{-6} (39 in a million)	78 x 10^{-6} (78 in a million)	9.5 x 10^{-6} (9.5 in a million)	22 x 10^{-6} (22 in a million)	**27 x 10^{-6} (27 in a million)**	
Chronic Hazard Index	Residential	0.08	0.06	0.03	0.06	0.02	1.0
	Occupational	0.4	0.2	0.3	0.2	0.3	
	Sensitive	0.09	0.06	0.04	0.07	0.04	
	Student	0.09	0.06	0.03	0.07	0.03	
	Recreational	0.4	0.2	0.3	0.2	0.3	
Acute Hazard Index	Residential	0.2	0.10	0.08	0.1	0.08	1.0
	Occupational	0.5	0.3	0.3	0.3	0.3	
	Sensitive	0.2	0.10	0.1	0.1	0.10	
	Student	0.2	0.09	0.1	0.1	0.09	
	Recreational	0.5	0.3	0.3	0.3	0.3	

Notes:

a) Exceedances of the significance thresholds are in **bold**. The significance thresholds apply to the floating increments only.

b) The maximum increments might not occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by subtracting the floating baseline impact from the Project impact. Rather, the subtraction must be done at each receptor, for all modeled receptors, and the maximum result selected.

c) The floating increment represents Project minus floating baseline.

d) When the maximum increment for a receptor type is negative, the maximum increment displayed is the increment at the maximum project receptor location.

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

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate. The risks associated with the 65th percentile (average) breathing rate will be less than these values. The risks associated with the 95th percentile (high end) breathing rate are 41 x 10^{-6} for the Project impact, 44 x 10^{-6} for the floating baseline impact, and 26 x 10^{-6} for the floating increment.

g) The No Project Increment represents the Project minus the No Project scenarios.

The calculation of cancer burden was also considered for the CEQA 2010 and floating baseline increment in accordance with the Port's methodology (POLA, 2009). That methodology stipulates that cancer burden will be calculated for all populations that are within census blocks or census tracts impacted by the one in a million incremental cancer risk isopleths. Because residential cancer risks attributable to the Project floating increment were estimated to exceed 1 x 10^{-6} (one in a million), cancer burden was calculated as per the Port's policy. As shown in Appendix C3, the cancer burden of the population in the area of impact (14,451 individuals) is 0.045, well below the significance threshold of 0.5.

Understanding Reported Results

For each receptor type, the various health values (e.g., cancer risk) provided in Table 3.2-33 often occur at different locations. This means that the maximum floating baseline increment cannot necessarily be determined by subtracting the maximum floating baseline result from the maximum Project result in the table. The floating baseline incremental impacts listed in Table 3.2-33 are determined by subtracting the floating baseline from the project impacts at each of the hundreds of modeled receptors, and the receptor with the largest difference (i.e., largest increment) is selected as the maximum increment. However, when the maximum increment for a receptor type (such as occupational) is negative, the maximum increment presented in the risk summary table is the increment at the receptor location with the maximum project impact. The following example shows how the maximum occupational floating cancer risk increment of 13 in a million in Table 3.2-33 was determined by examining the predicted risks at two modeled receptors.

Example for Determining Maximum Risk Increment

1. Determine occupational floating cancer risk increment at Receptor No. 918 (occupational maximum project impact location).
    a. Project cancer risk impact, occupational = 23.90 in a million
    b. Floating baseline cancer risk impact, occupational = 10.84 in a million
    c. Floating increment, occupational = 23.90 – 10.84 = 13.06 in a million

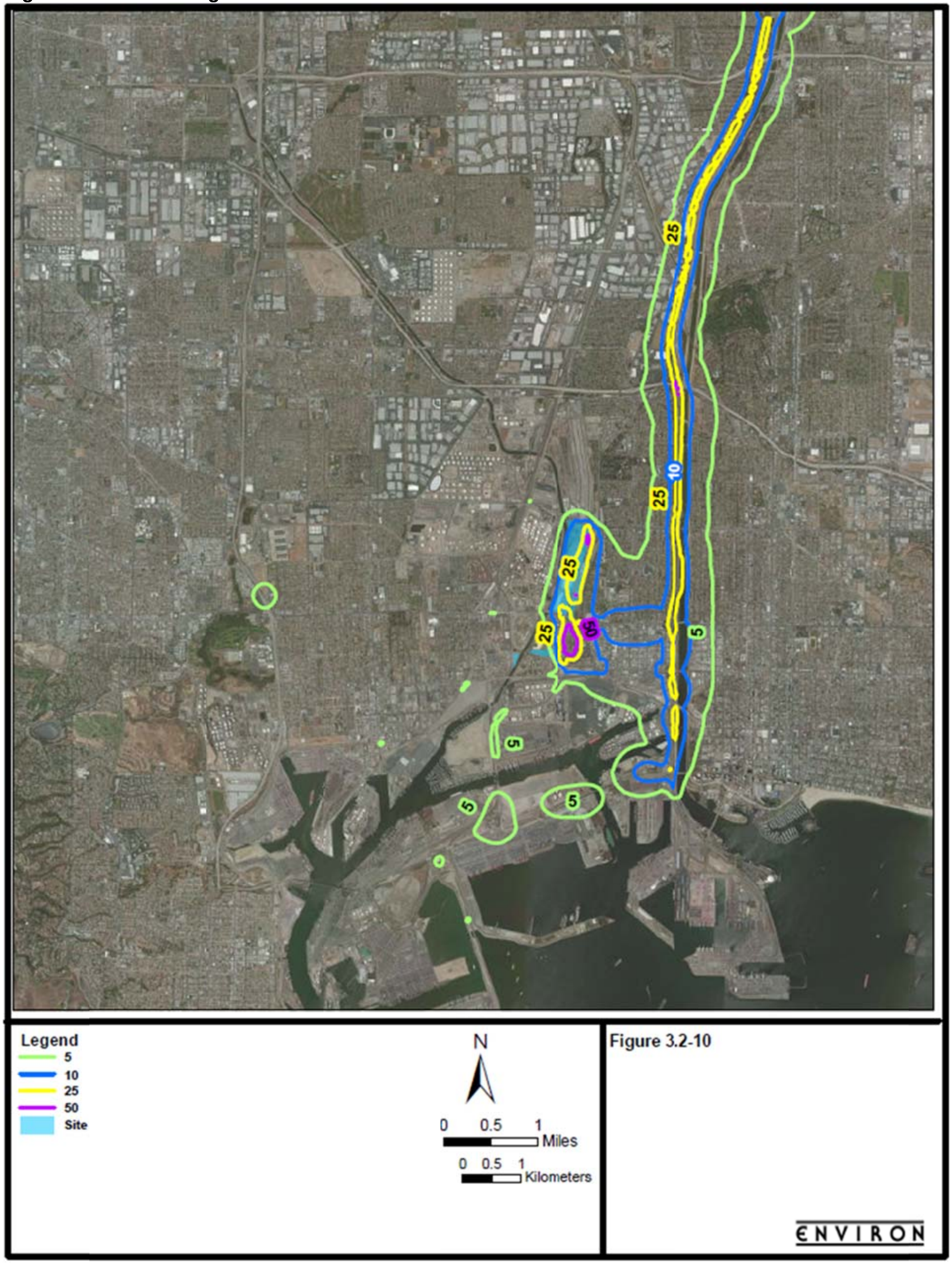
The selected receptor is the location of the maximum Project impact of 23.90 in a million (rounded to 24 in a million) for an occupational receptor, as shown in Table 3.2-33. Although this is the location of the maximum Project impact, the floating increment of 13.06 (rounded to 13) in a million at this location is less than the maximum floating increment of 13.14 among all receptors. Therefore this receptor is not the location of the maximum floating increment. The location of the maximum floating increment for an occupational receptor is at Receptor No. 945, as described below.

2. Determine Occupational floating cancer risk increment at Receptor No. 945 (occupational cancer risk MEI location as shown on Figure 3.2-1).
    a. Project cancer risk impact, occupational = 20.81 in a million
    b. Floating baseline cancer risk impact, occupational = 7.67 in a million
    c. Floating increment, occupational = 20.81 – 7.67 = 13.14 in a million

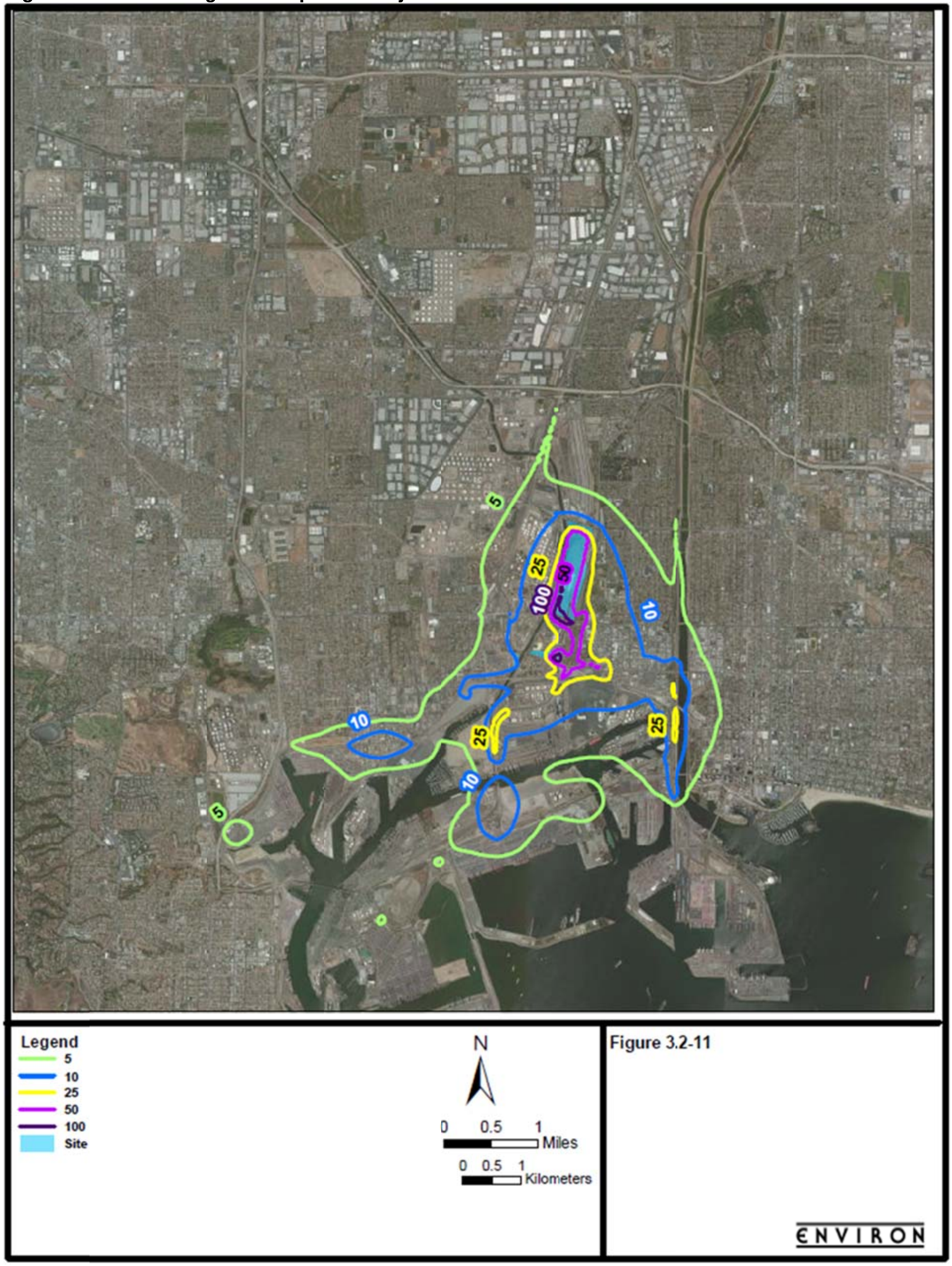
As discussed, this receptor is not the location of the maximum Project impact or the maximum floating baseline impact for an occupational receptor. However, based on the baseline and Project risk impacts at this location, the floating increment of 13.14 (rounded to 13) in a million calculated for this receptor is the largest increment of any modeled occupational receptor, excluding those on roadways. Therefore, this receptor is the location of the overall maximum floating increment.

Although the above example shows the floating baseline 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 for each receptor type. As discussed, if the maximum floating increment is a positive value - as it is for the Project - then this positive value is selected as the floating baseline increment and presented in Table 3.2-33.

Figure 3.2-10. Floating Baseline Residential Cancer Risk.

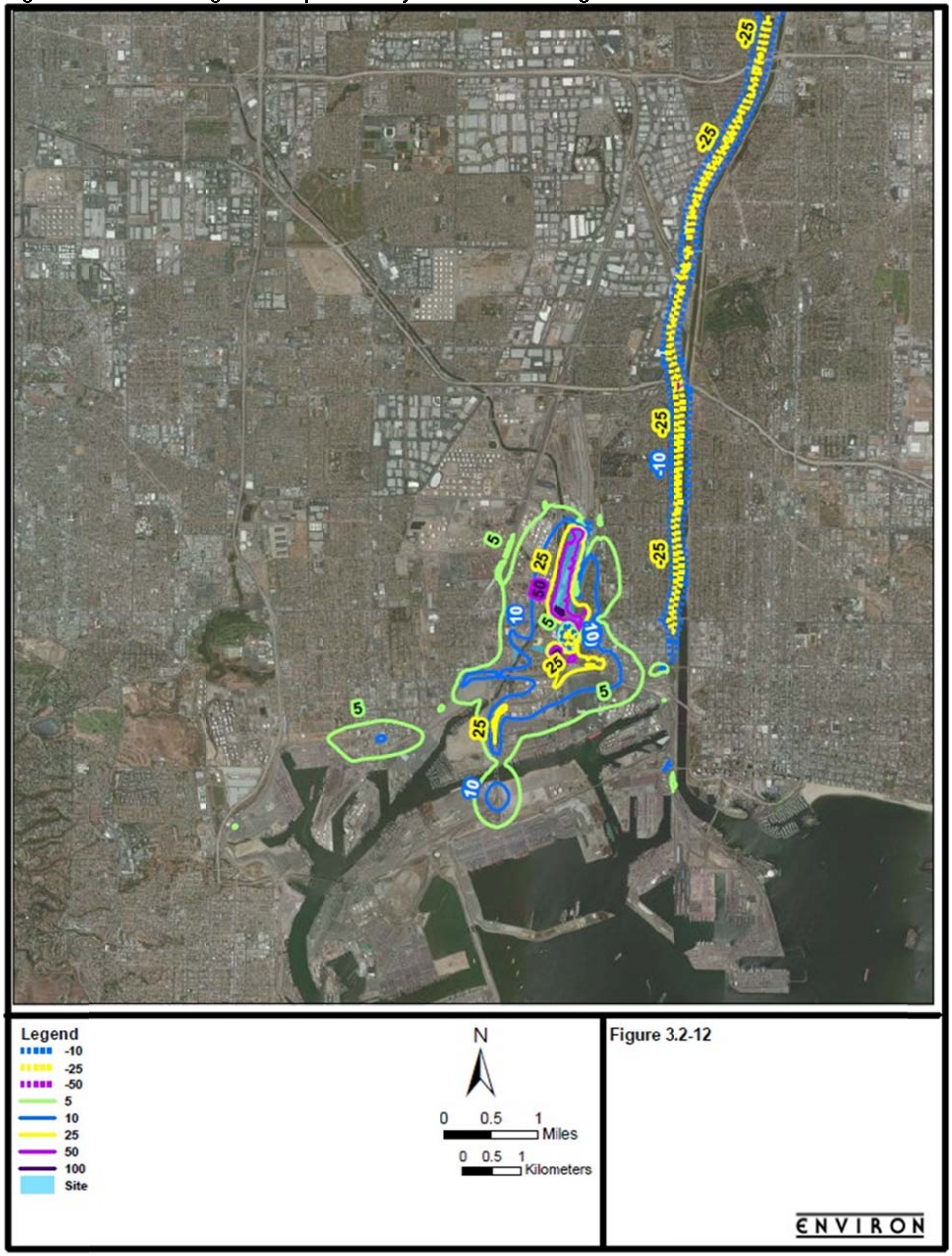


1 **Figure 3.2-11. Unmitigated Proposed Project Residential Cancer Risk.**



2
3

1 **Figure 3.2-12. Unmitigated Proposed Project minus Floating Baseline Residential Cancer Risk.**



2

Impact Determination

Table 3.2-33 shows that the floating cancer risk increment at the location of the MEI is predicted to be 20 in a million (20 x 10^{-6}) at a residential receptor. This risk value exceeds the significance threshold of 10 in a million. The receptor location for the maximum impact for residential receptors is in the Westside neighborhood of Long Beach in a residential development near the intersection of West 20th Street and San Gabriel Avenue, approximately 226 meters east of the southeastern site boundary. The floating increments are also in exceedance of the significance threshold at the occupational, sensitive, and recreational MEIs. The absolute floating baseline cancer risk, absolute Project cancer risk, and floating cancer risk increment isopleths are shown in Figures 3.2-10, 3.2-11 and 3.2-12 respectively.

The maximum floating chronic HI increments are predicted to be less than the CEQA significance threshold of 1.0 at all receptors.

The maximum floating acute HI increments are also predicted to be less than the CEQA significance threshold of 1.0 at all receptors.

Mitigation Measures

Mitigation Measures **MM AQ-1** to **MM AQ-3** applied in Impact AQ-1 would reduce the impacts from the proposed Project by reducing emissions from construction equipment operating at the Port pursuant to LAHD Construction Guidelines. In addition to the construction mitigation measures, other mitigation measures to reduce Project health risk impacts include the use of low-emission drayage trucks and periodic review of new technologies:

MM AQ-8. Low-Emission Drayage Trucks.

This measure would require drayage trucks calling on the SCIG facility to meet an emission reduction in diesel particulate matter emissions (DPM) of 95% by mass relative to the federal 2007 on-road heavy-duty diesel engine emission standard (“low-emission” trucks). Any technology meeting the emissions standard of a 95% reduction in DPM emissions relative to the MY2007 on-road truck standard is applicable in this mitigation measure.

The phase-in schedule for low-emission drayage trucks is shown in Table 3.2-34.

Table 3.2-34. Low-Emission Drayage Truck Phase-in Schedule.

Year	Truck Percentage
2016	10%
2017	12%
2018	15%
2019	20%
2020	25%
2021	35%
2022	50%
2023	75%
2024	80%
2025	85%
2026 and beyond	90%

BNSF will be required to specify in their drayage contracts that all drayage trucks calling on the SCIG facility shall use dedicated truck routes and GPS devices and shall meet the requirements specified above and will incorporate the fleet mix into the operations by the end of the specified years through the term of the lease. BNSF will be required to install Radio-Frequency Identification (RFID) readers to control access at the gate to the SCIG facility. Truck logs and throughput volume will be provided to the LAHD Environmental Management Division for tracking and reporting.

These trucks were modeled as liquefied natural gas (LNG) diesel pilot ignition heavy-duty drayage trucks in the mitigated Project HRA. In the event that throughput volume at the SCIG facility increases beyond the levels that were analyzed for any specific future year, the LAHD will evaluate the impacts of the increased throughput, and determine if the phase-in schedule must be accelerated beyond that shown in Table 3.2-34.

MM AQ-9: Periodic Review of New Technology and Regulations.

The Port shall require BNSF 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 Project site. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, BNSF shall work with the Port to implement such technology.

Potential technologies that may further reduce emission and/or result in cost-savings benefits for BNSF may be identified through future work on the CAAP. Over the course of the lease, BNSF 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 BNSF, BNSF shall implement not less frequently than once every five (5) 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.

MM AQ-10: Substitution of New Technology.

If any kind of technology becomes available and is shown to be as good or as better in terms of emissions reduction performance than an existing measure, the technology could replace the existing measure pending approval by the Port. The technology's emissions reductions must be verifiable through USEPA, CARB, or other reputable certification and/or demonstration studies to the Port's satisfaction.

Mitigation measures MM AQ-1 through MM AQ-3, and MM AQ-8 were quantified and the mitigated Project health risk was evaluated. Table 3.2-35 presents a summary of the maximum health impacts that would occur with incorporation of mitigation measures. The cancer risk for the location of the maximum residential impact for the Mitigated Project is 9.8 in a million (9.8×10^{-6}) which is about 68 percent lower than the maximum residential cancer risk associated with the unmitigated Project. The maximum residential chronic HI would increase by about 12 percent. The maximum residential acute HI would be reduced by about 20 percent.

Table 3.2-35. Maximum Health Impacts Associated with the Mitigated Project.

Health Impact	Receptor Type	Maximum Predicted Impact					Significance Threshold
		Project	CEQA 2010 Baseline	CEQA 2010 Increment	Floating Baseline	Floating CEQA Increment	
Cancer Risk	Residential	9.8×10^{-6} (9.8 in a million)	68×10^{-6} (68 in a million)	-28×10^{-6} (-28 in a million)	34×10^{-6} (34 in a million)	0.2×10^{-6} (0.2 in a million)	10×10^{-6} (10 in a million)
	Occupational	20×10^{-6} (20 in a million)	51×10^{-6} (51 in a million)	7×10^{-6} (7 in a million)	21×10^{-6} (21 in a million)	9.5×10^{-6} (9.5 in a million)	
	Sensitive	9.7×10^{-6} (9.7 in a million)	45×10^{-6} (45 in a million)	-32×10^{-6} (-32 in a million)	20×10^{-6} (20 in a million)	-3.5×10^{-6} (-3.5 in a million)	
	Student	0.9×10^{-6} (0.9 in a million)	0.9×10^{-6} (0.9 in a million)	0.1×10^{-6} (0.1 in a million)	0.3×10^{-6} (0.3 in a million)	0.6×10^{-6} (0.6 in a million)	
	Recreational	4.5×10^{-6} (4.5 in a million)	78×10^{-6} (78 in a million)	6.3×10^{-6} (6.3 in a million)	22×10^{-6} (22 in a million)	7.3×10^{-6} (7.3 in a million)	
Chronic Hazard Index	Residential	0.09	0.06	0.04	0.06	0.03	1.0
	Occupational	0.4	0.2	0.2	0.2	0.2	
	Sensitive	0.09	0.06	0.03	0.07	0.03	
	Student	0.09	0.06	0.03	0.07	0.02	
	Recreational	0.4	0.2	0.2	0.2	0.2	
Acute Hazard Index	Residential	0.1	0.1	0.06	0.1	0.06	1.0
	Occupational	0.5	0.3	0.2	0.3	0.2	
	Sensitive	0.1	0.10	0.07	0.1	0.06	
	Student	0.1	0.09	0.07	0.1	0.06	
	Recreational	0.5	0.3	0.2	0.3	0.2	

Notes:

a) Exceedances of the significance thresholds are in **bold**. The significance thresholds apply to the floating increments only.

b) The maximum increments might not occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by subtracting the floating baseline impact from the project impact. Rather, the subtraction must be done at each receptor, for all modeled receptors, and the maximum result selected.

c) The floating increment represents Project minus floating baseline.

d) When the maximum increment for a receptor type is negative, the maximum increment displayed is the increment at the maximum project receptor location.

e) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other modeled receptors would be less than these values for each receptor type. The recreational cancer risk floating increment presented above does not include receptor locations on confirmed private property not accessible to the public.

f) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate. The risks associated with the 65th percentile (average) breathing rate will be less than these values. The risks associated with the 95th percentile (high end) breathing rate are 62×10^{-6} for the Project impact, 740 x 10-6 for the floating baseline impact, and -209 x 10-6 for the floating increment.

g) The Mitigated Project Alternative assumes that the Port guidelines for reducing emissions from construction equipment operating at the Port are followed and includes the use of LNG trucks for port activities; it is otherwise equivalent to the Unmitigated Project Alternative.

The values in Table 3.2-35 show that the floating cancer risk increment at the location of the Mitigated Project MEI is predicted to be 0.2 in a million (0.2×10^{-6}), at a residential receptor. This risk value is below the significance threshold of 10 in a million. The receptor location for the maximum Mitigated Project impact for residential receptors is in the same location as the maximum unmitigated Project impact in the Westside neighborhood of Long Beach in a residential development near the intersection of West 20th Street and San Gabriel Avenue, approximately 226 meters east of the southeastern site boundary. The floating incremental MEI risks for the Mitigated Project are also below the CEQA significance threshold at all other categories of receptors, including occupational, sensitive, student, and recreational.

The maximum chronic floating HI increments are predicted to be less than the CEQA significance threshold of 1.0 at all receptors. The maximum acute floating HI increments are also predicted to be less than the CEQA significance threshold of 1.0 for all receptors.

Residential cancer risks associated with the Mitigated Project floating increment were estimated to exceed 1×10^{-6} (one in a million), and cancer burden was calculated as per the Port's policy. As shown in Appendix C3, the cancer burden of the population in the area of impact (1,404 individuals) is 0.0014, below the significance threshold of 0.5.

Residual Impacts

Residual impacts would be less than significant.

Additional Analyses for Informational Purposes

Particulates: Morbidity and Mortality

Since the Project would generate emissions of DPM, **Impact AQ-7** also discusses the effects of ambient PM on mortality and morbidity for informational purposes only. As described in Impact **AQ-4**, the results of ambient air dispersion modeling indicated that operation of the Project would result in off-site 24-hour $PM_{2.5}$ concentrations that exceed the SCAQMD significance threshold of 2.5 $\mu g/m^3$. Because of this exceedance, operational 24-hour $PM_{2.5}$ concentrations meet the Port's criteria for calculating morbidity and mortality attributable to $PM_{2.5}$. In accordance with the Port's methodology (Appendix C3), census blocks lying partially or completely within the 24-h $PM_{2.5}$ threshold concentration isopleths were identified. All census blocks within the Project increment were found to be located in industrialized areas, and aerial images did not show any residential structures.

Because no residential populations inhabit the impacted census blocks, the Project is not expected to have an impact on PM-attributable morbidity or mortality. Accordingly, no calculations of morbidity or mortality were calculated for the unmitigated Project. However, in the risk assessment, particulate matter is evaluated by comparing estimated DPM levels to the OEHHA REL for DPM. In addition, the estimated off-site PM2.5 concentrations estimated within the inhabited census blocks did not exceed the CARB PM2.5 threshold of 5.8 ug/m^3.

Impact AQ-8: The proposed Project would not conflict with or obstruct implementation of an applicable air quality plan.

Proposed Project operations would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust. The 2007 AQMP is the current applicable air quality plan and proposes emission reduction measures that are designed to bring the

SCAB 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 operations would comply with these control measures. The SCAQMD also adopts AQMP control measures into SCAQMD rules and regulations, which are then used to regulate sources of air pollution in the SCAB. Therefore, compliance with these requirements would ensure that the proposed Project would not conflict with or obstruct implementation of the AQMP.

The Port regularly provides SCAG with its Portwide cargo forecasts for development of the AQMP. Therefore, the attainment demonstrations included in the 2007 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. In its 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP), SCAG has identified the SCIG project as potentially playing a key role in addressing the growth of high-density truck traffic (SCAG, 2012). Pursuant to Health and Safety Code §40460(b) SCAG provides portions of the AQMP relating to transportation programs, measures and strategies (SCAG, 2012).

Proposed Project operations were also evaluated for consistency with the San Pedro Bay Ports' CAAP, which has the goal of reducing emissions and health risk in the area of the San Pedro Bay Ports, and the measures identified in the CAAP to achieve those goals.

Impact Determination

The proposed Project would not conflict with or obstruct implementation of the AQMP. The proposed Project incorporates a number of environmental features which are consistent with CAAP measures, as described in Table 3.2-27. With the low-emission drayage truck mitigation measure (MM AQ-8), the Project is now consistent with the emissions and health risk reduction goals of the CAAP.

Therefore, there would be no significant impacts for the Project.

Mitigation Measures

No impacts; therefore, mitigation is not required.

Residual Impacts

No impacts.

3.2.4.4 Summary of Impact Determinations

Table 3.2-36 provides a summary of the impact determinations of the proposed Project related to Air Quality, as described in the detailed discussion in Sections 3.2.4.3.

For each type of potential impact, the table provides a description of the impact, the impact determination, any applicable mitigation measures, and residual impacts (that is, the impact remaining after mitigation). All impacts, whether significant or not, are included in this table.

Table 3.2-36. Summary Matrix of Impacts and Mitigation Measures for Air Quality Associated with the Proposed Project.

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
AQ-1: The proposed Project would result in construction-related emissions that exceed an SCAQMD threshold of significance.	**Significant impact**	**MM AQ-1:** Fleet modernization for off-road equipment. **MM AQ-2:** Fleet modernization for on-road trucks. **MM AQ-3:** Additional fugitive dust control. **MM AQ-4:** Best management practices. **MM AQ-5:** General mitigation measure. **MM AQ-6:** Special precautions near sensitive sites.	**Significant and unavoidable**
AQ-2: The proposed Project construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.	**Significant impact**	**MM AQ-1:** Fleet modernization for off-road equipment. **MM AQ-2:** Fleet modernization for on-road trucks. **MM AQ-3:** Additional fugitive dust control.	**Significant and unavoidable**
AQ-3: The proposed Project would not result in operational emissions that exceed a SCAQMD threshold of significance.	Less than significant impact	Mitigation not required	Less than significant impact
AQ-4: The proposed Project operations would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.	**Significant impact**	**MM AQ-7**: On-site sweeping at SCIG facility.	**Significant and unavoidable**
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.	Less than significant impact	Mitigation not required	Less than significant impact
AQ-6: The proposed Project would not create objectionable odors at the nearest sensitive receptor.	Less than significant impact	Mitigation not required	Less than significant impact
AQ-7: The Project would expose receptors to significant levels of TACs.	**Significant impact**	Mitigation required **MM AQ-1:** Fleet modernization for off-road equipment. **MM AQ-2:** Fleet modernization for on-road trucks. **MM AQ-8:** Low-Emission Drayage Trucks. **MM AQ-9:** Periodic Review of New Technology and Regulations **MM AQ-10:** Substitution of New Technology	Less than significant impact
AQ-8: The proposed Project would not conflict with or obstruct implementation of an applicable air quality plan.	No impact	Mitigation not required	No impact

3.2.5 Consideration of Project Conditions Subject to Approval

The following project conditions are recommended for inclusion in the lease between the LAHD and BNSF for the SCIG facility. These project conditions are not required as CEQA mitigation measures but are important because they advance important LAHD environmental goals and objectives.

PC AQ-11. Zero Emission Technologies Demonstration Program

This project condition would require BNSF to work with the Port of Los Angeles to advance zero emission technologies, consistent with the Port's 2012-2017 Strategic Plan objective for the advancement of technology and sustainability, as follows:

- Provide match funding to the Clean Air Action Plan Technology Advancement Program (TAP) zero emissions programs in an amount equal to that provided by the Port of Los Angeles up to a maximum of $3 million for purposes of zero emission drayage truck, cargo handling equipment, and proof-of-concept rail technologies demonstration.
- Agree to an expeditious phase in of zero emission drayage trucks and other zero emission technologies into the specification for vehicles serving SCIG operations based on a determination of technical and commercial feasibility made by the Ports of Los Angeles and Long Beach Boards of Harbor Commissions consistent with criteria developed by the TAP Advisory Committee (TAP AC) in consultation with the project applicant and approved by the Ports of Los Angeles and Long Beach Boards of Harbor Commissions. The phase-in shall:
    - Occur at a rate recommended by the TAP AC consistent with the feasibility criteria;
    - Be approved by the Ports of Los Angeles and Long Beach Board of Harbor Commissions consistent with the feasibility criteria; and
    - Lead to the requirement that only zero emission drayage trucks would operate at the SCIG facility.

    Long-term goal: All drayage trucks operating at the SCIG facility shall be 100% zero emissions by the end of 2020.
- Participate in a zero emissions technologies industry stakeholder group that would assist in the development of technical and commercial criteria for determination of feasibility of zero emission equipment, and advise and support demonstrations of zero emission drayage truck, cargo handling equipment, and proof of concept rail technologies in port-related operations as coordinated and directed by staff of the two ports through the TAP.
- Such demonstrations shall be performed using an appropriate railyard identified by the TAP until such time that SCIG is built, and thereafter BNSF shall allow zero emission technologies tested under the TAP zero emissions program to operate using the SCIG facility once it is constructed. BNSF shall allow TAP representatives access into portions of the SCIG facility where the zero emission equipment is being tested for the purpose of test evaluation, all subject to reasonable notice, compliance with the BNSF safety and operational rules, and without interference with facility operation.

- Criteria for evaluation of the results of all demonstrations shall be developed by the TAP AC in consultation with the project applicant regarding any equipment to be serving the SCIG facility and submitted for approval to the Ports of Los Angeles and Long Beach Board of Harbor Commissions. Such criteria shall include, but not be limited to: technical practicability, commercial reasonableness, operationally proven, and commercial availability. Evaluation of the results of demonstration testing shall be performed by the TAP. Recommendations regarding the technical and commercial feasibility of these vehicles shall be presented by the TAP to the Ports of Los Angeles and Long Beach Board of Harbor Commissions for approval.

  Near-term goal: The TAP will develop an action plan by 2014 that outlines key strategies for the advancement of zero emission drayage trucks, including all criteria for evaluation of technical, commercial and operational feasibility, and identification of an appropriate railyard to support zero emission drayage truck demonstration projects starting in 2015.

  Near-term and long-term goal: Starting in 2015, the TAP shall conduct periodic evaluations of zero emission truck demonstrations on a reoccurring basis at least every two years until such time that the Ports of Los Angeles and Long Beach Board of Harbor Commissioners determine that the vehicles are technically and commercially feasible. The results of the regular evaluations shall be documented, including the analysis and conclusions as verified by the TAP, and shall be presented to the Ports of Los Angeles and Long Beach Board of Harbor Commissioners.

PC AQ-12. San Pedro Bay Ports CAAP Measure RL-3

CAAP measure RL-3 establishes the goal that the Class 1 locomotive fleet associated with new and redeveloped near-dock rail yards use 15-minute idle restrictors, use ULSD or alternative fuels, and meet a minimum performance requirement of an emissions equivalent of at least 50 percent Tier 4 line-haul locomotives and 40% Tier 3 line-haul locomotives when operating on port properties by 2023. In March of 2008, USEPA finalized a regulation which established a 2015 date for introduction of Tier 4 locomotives. There is no regulatory mechanism in place that would mandate the early production or sale of Tier 4 locomotives prior to 2015. Additionally there is no requirement to turn fleets over to Tier 4, when it becomes available. Implementation of the RL-3 goal for the locomotives calling at SCIG while on port properties would be based on the commercial availability of operationally proven Tier 4 locomotives in 2015 and any adjustment in that date will require equivalent adjustment in the goal achievement date. The RL-3 emissions goal for locomotives calling on SCIG while on port properties may also be achieved by BSNF's reduction in air emissions anywhere in the South Coast Air Basin equivalent to the RL-3 goal for locomotives calling at SCIG while on port properties through any other alternative means. RL-3 further establishes the goal that, by the end of 2015, all Class 1 switcher locomotives operating on port property will meet USEPA Tier 4 non-road standards. In September 2009, CARB adopted its "Staff Recommendations to Provide Further Locomotive and Rail yard Emission Reductions" (CARB, 2009d) which identified several high priority strategies for reducing emissions from locomotive operations in California, including providing support for the ports "to accelerate the turnover of cleaner Tier 4 line-haul locomotives serving port properties as expeditiously as possible following their introduction in 2015, with the goal of 95 percent Tier 4 line-haul locomotives serving the ports by 2020." Thus, with the assistance of the ports' regulatory agency partners and in concert with

CARB's stated goals, measure RL3 will support the achievement of accelerating the natural turnover of the line-haul locomotive fleet.

This project condition was not quantified for mass emissions, air pollutant concentration or health risk benefit.

3.2.6 Mitigation Measure Monitoring and Tracking

Table 3.2-37 presents the mitigation monitoring for air quality impacts.

Table 3.2-37. Mitigation Measure Monitoring for Air Quality and Meteorology.

AQ-1: The Project would result in construction-related emissions that exceed an SCAQMD threshold of significance. **AQ-2: The proposed Project construction would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.**	
Mitigation Measures	**MM AQ-1: Fleet Modernization for Construction Equipment.** 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. From January 1, 2012, to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp, except marine vessels and harbor craft, will meet Tier-3 off-road emission standards at a minimum. In addition, all construction equipment greater than 50 hp will be retrofitted with a CARB-verified Level 3 DECS. Per Port's Construction Guidelines, for CEQA Project, in 2012 to 2014, construction equipment shall meet 50% Tier 3 Level 3, 20% Tier 2 Level 3, 10% Tier 1 Level 3, 10% Tier 2 Level 2, and 10% Tier 1 Level 2. b. Post-January 1, 2015 on: All off-road diesel-powered construction equipment greater than 50 hp, except marine vessels and harbor craft, will meet Tier-4 off-road emission standards at a minimum. Per Port's Construction Guidelines, for CEQA Project, in 2015 and going forward, construction equipment shall meet 50% Tier 4, Tier 3 Level 3, 20% Tier 3 Level 3, 10% Tier 1 Level 3, 10% Tier 2 Level 2, and 10% Tier 1 Level 2. **MM AQ-2: Fleet Modernization for Onroad Trucks.** 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. Tier Specifications: a. On-road trucks except for Import Haulers and Earth Movers: From January 1, 2012 on: All on-road heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used at the Port of Los Angeles will comply with EPA 2007 on-road emission standards for PM10 and NOx (0.01 g/bhp-hr and at least 1.2 g/bhp-hr, respectively). b. For Import Hauler Only: From January 1, 2012 on: All on-road heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used to move dirt to and from the construction site via public roadways at the Port of Los Angeles will comply with EPA 2004 on-road emission standards for PM10 and NOx (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively). c. For Earth Movers Only: From January 1, 2012 on: All heavy-duty diesel trucks with a GVWR of 19,500 pounds or greater used to move dirt within the construction site at the Port of Los Angeles will comply with EPA 2004

on-road emission standards for PM10 and NOx (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively).

A copy of each unit's certified EPA rating and each unit's CARB or SCAQMD operating permit, will be provided at the time of mobilization of each applicable unit of equipment.

MM AQ-3: Additional Fugitive Dust Controls. The calculation of fugitive dust (PM) from Project earth-moving activities assumes a 69 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 Project construction contractor shall submit a fugitive dust control plan or notification to SCAQMD (for construction sites greater than 50 acres)

The construction contractor shall further reduce fugitive dust emissions to 90 percent from uncontrolled levels. The following measures to reduce dust should be implemented and/or included in the contractor's fugitive dust control plan:

- SCAQMD's Best Available Control Technology (BACT) measures must be followed on all projects. They are outlined on Table 1 in Rule 403. Large construction projects (on a property which contains 50 or more disturbed acres) shall also follow Rule 403 Tables 2 and 3.
- Active grading sites shall be watered three times per day.
- Contractors shall apply approved non-toxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas.
- 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. ("Spilling Loads on Highways").
- 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.
- Open storage piles (greater than 3 feet tall and a total surface area of 150 square feet) shall be covered with a plastic tarp or chemical dust suppressant.
- Stabilize the materials while loading, unloading and transporting to reduce fugitive dust emissions.
- Belly-dump truck seals should be checked regularly to remove trapped rocks to prevent possible spillage.
- Comply with track-out regulations and provide water while loading and unloading to reduce visible dust plumes.
- Waste materials should be hauled off-site immediately.
- Pave road and road shoulders where available.
- Traffic speeds on all unpaved roads shall be reduced to 15 mph or less.
- Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.
- Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the extent practicable.
- Require the use of clean-fueled sweepers pursuant to SCAQMD Rule 1186 and

	Rule 1186.1 certified street sweepers. Sweep streets at the end of each day if visible soil is carried onto paved roads on-site or roads adjacent to the site to reduce fugitive dust emissions. • Appoint a construction relations officer to act as a community liaison concerning on-site construction activity including resolution of issues related to PM10 generation. **MM AQ-4: Best Management Practices.** The following measures are required on construction equipment (including onroad trucks): • Use diesel oxidation catalysts and catalyzed diesel particulate traps. • Maintain equipment according to manufacturers' specifications. • Restrict idling of construction equipment to a maximum of 5 minutes when not in use. • 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-5: General Mitigation Measure.** For any of the above mitigation measures (MM AQ-1 through AQ-3), if a CARB-certified technology becomes available and is shown to be equal or more effective in terms of emissions performance than the existing measure, the technology could replace the existing measure pending approval by the LAHD. **MM AQ-6: Special Precautions near Sensitive Sites.** When construction activities are planned within 1,000 feet of sensitive receptors (defined as schools, playgrounds, day care centers, and hospitals), the construction contractor shall notify each of these sites in writing at least 30 days before construction activities begin.
Timing	Prior to and during Project Construction.
Methodology	MM AQ-1 to AQ-6 will be required in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	BNSF construction contractor(s) for SCIG and construction contractor(s) for alternate business locations will be responsible for implementing the mitigation measures in the contract specifications reviewed and approved by LAHD Environmental Management Division.
Residual Impacts	Significant and unavoidable
AQ-4: The Project would result in off-site ambient air pollutant concentrations that exceed an SCAQMD threshold of significance.	
Mitigation Measures	**MM AQ-7: On-Site Sweeping at SCIG Facility.** BNSF shall sweep the SCIG facility on-site, along routes used by drayage trucks, yard hostlers, service trucks and employee commuter vehicles, on a weekly basis using a commercial street sweeper or any technology with equivalent fugitive dust control.
Timing	During Project Operations beginning in 2016.
Methodology	MM AQ-7 will be required in the lease for the SCIG facility. LAHD will monitor implementation of mitigation measures during operation.
Responsible Parties	LAHD and BNSF.
Residual Impacts	Significant and unavoidable
AQ-7: The Project would expose receptors to significant levels of TACs.	
Mitigation Measures	**MM AQ-8. Low-Emission Drayage Trucks**. This proposed measure would require drayage trucks calling on the SCIG facility to meet an emission reduction in diesel

	particulate matter emissions (DPM) of 95% by mass relative to the federal 2007 on-road heavy-duty diesel engine emission standard ("low-emission" trucks). The requirement for the percentage of trucks calling on the SCIG facility to be low-emission trucks is as follows: 10 percent in 2016; 12 percent in 2017; 15 percent in 2018; 20 percent in 2019; 25 percent in 2020; 35 percent in 2021; 50 percent in 2022; 75 percent in 2023; 80 percent in 2024; 85% in 2025; and 90 percent in 2026 and beyond. BNSF will be required to specify in their drayage contracts that all drayage trucks calling on the SCIG facility shall use dedicated truck routes and GPS devices and shall meet the requirements specified above and will incorporate the fleet mix into the operations by the end of the specified years through the term of the lease. BNSF will be required to install Radio-Frequency Identification (RFID) readers to control access at the gate to the SCIG facility. Truck logs and throughput volume will be provided to the LAHD Environmental Management Division for tracking and reporting. In the event that throughput volume at the SCIG facility increases beyond the levels that were analyzed for any specific future year, the LAHD will determine if the phase-in schedule must be accelerated beyond that described above. **MM AQ-9: Periodic Review of New Technology and Regulations.** The Port shall require the business 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 Project site. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, the business 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 business may be identified through future work on the CAAP. Over the course of the lease, the business 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 business, the business shall implement not less frequently than once every five (5) 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. **MM AQ-10**: Substitution of New Technology. If any kind of technology becomes available and is shown to be as good or as better in terms of emissions reduction performance than an existing measure, the technology could replace the existing measure pending approval by the Port. The technology's emissions reductions must be verifiable through USEPA, CARB, or other reputable certification and/or demonstration studies to the Port's satisfaction
Timing	During Project Operations beginning in 2016.
Methodology	MM AQ-8 to MM AQ-10 will be required in the lease for the SCIG facility. LAHD will monitor implementation of mitigation measures during operation.
Responsible Parties	LAHD and BNSF.
Residual Impacts	Less than significant impacts.
The following measures are Project Conditions that may be included in the lease for the SCIG facility subject to approval by the Board. The conditions are not required as CEQA mitigation measures but are included here for tracking purposes.	
Project Conditions (PC)	
	PC AQ-11. Zero Emission Technologies Demonstration Program. This project condition would require BNSF to work with the Port of Los Angeles to advance zero

	emission technologies, consistent with the Port's 2012-2017 Strategic Plan objective for the advancement of technology and sustainability, as follows: • Provide match funding to the Clean Air Action Plan Technology Advancement Program (TAP) zero emissions programs in an amount equal to that provided by the Port of Los Angeles for purposes of zero emission drayage truck, cargo handling equipment, and proof-of-concept rail technologies demonstration. • Agree to an accelerated phase in of zero emission drayage trucks and other zero emission technologies in SCIG operations in the most expeditious manner possible following a determination of technical and commercial feasibility made by the Ports of Los Angeles and Long Beach Boards of Harbor Commissioners. The phase-in shall occur at a rate determined by the TAP and approved by the Ports of Los Angeles and Long Beach Board of Harbor Commissioners, leading to the requirement that only zero emission drayage trucks would operate at the SCIG facility. **Long-term** Goal: All drayage trucks operating at the SCIG facility shall be 100% zero emissions by 2020. • Participate in a zero emissions technologies industry stakeholder group that would advise and support demonstrations of zero emission drayage truck, cargo handling equipment, and proof of concept rail technologies in port-related operations as coordinated and directed by staff of the two ports through the TAP. • Such demonstrations shall be performed using an appropriate railyard identified by the TAP until such time that SCIG is built, and thereafter BNSF shall allow zero emission technologies tested under the TAP zero emissions program to operate using the SCIG facility once it is constructed. BNSF shall allow TAP representatives access into portions of the SCIG facility where the zero emission equipment is being tested for the purpose of test evaluation, all subject to reasonable notice, compliance with the BNSF safety and operational rules, and without interference with facility operation. • Criteria for evaluation of the results of all demonstrations shall be established by the TAP, and evaluation of the results of demonstration testing shall be performed by the TAP. Recommendations regarding the technical and commercial feasibility of these vehicles shall be developed by the TAP and presented to the Ports of Los Angeles and Long Beach Board of Harbor Commissioners for approval. **Near-term Goal:** The TAP will develop an action plan by 2014 that outlines key strategies for the advancement of zero emission drayage trucks, including identification of an appropriate railyard to support zero emission drayage truck demonstration projects starting in 2015. **Near-term and Long-term Goal:** Starting in 2015, the TAP shall conduct periodic evaluations of zero emission truck demonstrations on a reoccurring basis at least every two years until such time that the Ports of Los Angeles and Long Beach Board of Harbor Commissioners determine that the vehicles are technically and commercially feasible. The results of the regular evaluations shall be documented, including the analysis and conclusions as verified by the TAP, and shall be presented to the Ports of Los Angeles and Long Beach Board of Harbor Commissioners.
	PC AQ-12. San Pedro Bay Ports CAAP Measure RL-3. CAAP measure RL-3 establishes the goal that the Class 1 locomotive fleet associated with new and redeveloped near-dock rail yards use 15-minute idle restrictors, use ULSD or alternative fuels, and meet a minimum performance requirement of an emissions equivalent of at least 50% Tier 4 line-haul locomotives and 40% Tier 3 line-haul locomotives when operating on port properties by 2023. In March of 2008, USEPA finalized a regulation which established a 2015 date for introduction of Tier 4 locomotives. There is no regulatory mechanism in place that would mandate the introduction of Tier 4

	locomotives prior to 2015. Implementation of RL-3 would be based on the commercial availability of Tier 4 locomotives in 2015 and any adjustment in that date will require equivalent adjustment in the goal achievement date. The RL-3 goal may also be achieved by reduction in air emissions equivalent to RL-3 through alternative means. RL-3 further establishes the goal that, by the end of 2015, all Class 1 switcher locomotives operating on port property will meet USEPA Tier 4 non-road standards. In September 2009, CARB adopted its "Staff Recommendations to Provide Further Locomotive and Railyard Emission Reductions" (http://www.arb.ca.gov/board/books/2009/092409/09-8-5pres.pdf CARB, 2009d) which identified several high priority strategies for reducing emissions from locomotive operations in California, including providing support for the ports "to accelerate the turnover of cleaner Tier 4 line-haul locomotives serving port properties as expeditiously as possible following their introduction in 2015, with the goal of 95% Tier 4 line-haul locomotives serving the ports by 2020." Thus, with the assistance of the ports' regulatory agency partners and in concert with CARB's stated goals, measure RL3 will support the achievement of accelerating the natural turnover of the line-haul locomotive fleet.
Timing	During Project operation.
Methodology	PC AQ-11 and -12 may be included in the SCIG lease for operation. LAHD may monitor implementation of the lease measures during operation.
Responsible Parties	LAHD and BNSF.

3.2.7 Significant Unavoidable Impacts

Project construction and operation would generate significant unavoidable impacts related to Impact AQ-1 (construction mass emissions) for VOC, CO, NOx, PM10, and PM2.5; Impact AQ-2 (construction off-site ambient air pollutant concentrations) for 1-hour and annual NO2, 24-hr and annual PM10, and 24-hr PM2.5; and Impact AQ-4 (operational off-site ambient air pollutant concentrations) for 1-hour and annual NO2, 24-hr and annual PM10, and 24-hr PM2.5.