4.B Air Quality

4.B.1 Introduction

This section describes the existing regulatory framework for air quality management along with existing air quality conditions in the Project Site vicinity. It analyzes the extent to which Project Site development would affect existing air quality conditions, both regionally and locally, from Project Site development-related activities that emit criteria and non-criteria air pollutants. This section also analyzes the types and quantities of emissions that would be generated on a temporary basis due to construction and over the long term due to operation of Project-related development. The section determines whether those emissions are significant in relation to applicable air quality standards. Feasible mitigation measures are identified as necessary to reduce significant impacts.

The analysis in this section includes a review of existing air quality conditions in the region and air quality regulations administered by the United States Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD), and uses methodologies identified by BAAQMD to evaluate the air pollutant emissions that would result from Project Site development. This section also presents estimates of existing and future emissions based on standard air quality modeling techniques recommended by BAAQMD. In addition to modeling of Project Site development-related air pollutant emissions, a health risk assessment was prepared for Project Site development and is included in **Appendix D**.

Emissions of greenhouse gases resulting from development of the Project Site and their impacts in relation to climate change and the goals of Assembly Bill 32 (AB 32) are presented and discussed in Section 4.F, *Greenhouse Gas Emissions*, of this EIR.

4.B.2 Environmental Setting

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions, including wind speed, wind direction, and air temperature, in combination with local surface topography (i.e., geographic features such as mountains, valleys, and San Francisco Bay), determine the effect of air pollutant emissions on local air quality.

Climate and Meteorology

The Project Site is located within the boundaries of the San Francisco Bay Area Air Basin (Bay Area Basin). The Bay Area Basin's moderate climate steers storm tracks away from the region for much of the year, although storms generally affect the region from November through April. Brisbane's proximity to the onshore breezes stimulated by the Pacific Ocean provides for generally very good air quality at the Project Site. These winds are the result of the presence of the San Bruno Gap to the west of the Project Site. The San Bruno Gap is oriented northwest to

southeast, the same direction as the prevailing wind with elevations under 200 feet. Consequently, the Project Site receives some of the highest wind speeds along the peninsula. These winds maintain relatively good air quality in the flat valley portions of Brisbane.

Temperatures at the Project Site vicinity average in the mid-50s annually, generally ranging from the low-40s on winter mornings to mid-70s during summer afternoons. Daily and seasonal oscillations of temperature are small because of the moderating effects of the nearby San Francisco Bay. In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the "rainy" period from November through April. Precipitation may vary widely from year to year as a shift in the annual storm track of a few hundred miles can mean the difference between a very wet year and drought conditions.

The nearest publicly operated meteorological monitoring facility to the Project Site is located at the San Francisco Airport, approximately 5 miles south of the Project Site. The data presented below was provided by the BAAQMD for that monitoring station, and used in the dispersion modeling discussed later in this analysis. While the monitoring facility is not located on the Project Site, both the Project Site and the monitoring site at San Francisco Airport are exposed to westerly wind flow through the San Bruno Gap, and are therefore comparable in terms of ambient air quality. This station has recorded an annual predominant wind speed of 13.4 miles per hour and an annual predominant wind direction of out of the west northwest. Peak annual winds occur during winter storms. South and southeast winds typically also precede weather systems passing through the region. Additionally site-specific wind data has been collected at the Project Site between 2008 and 2010. These data indicate an average wind speed of 10.5 miles per hour, predominantly out of the west (NRG Systems, 2011).

Criteria Air Pollutants

As required by the federal Clean Air Act passed in 1970, the U.S. EPA has identified seven criteria air pollutants that are pervasive in urban environments, and for which state and national health-based ambient air quality standards have been established. The U.S. EPA calls these pollutants "criteria air pollutants" because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead are the seven criteria air pollutants.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOC by some regulating agencies) and nitrogen oxides (NOx). The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area Basin, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes

eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

BAAQMD and the CARB operate a regional air quality monitoring network that measures the ambient concentrations of the seven criteria air pollutants. Data from these stations record existing air pollutant levels. Probable future levels of air quality in the Project Site area can generally be inferred from ambient air quality measurements conducted by BAAQMD at its nearest monitoring stations by examining trends over time. The nearest air quality monitoring station to the Project Site is located on Arkansas Street in San Francisco, approximately 4.2 miles northeast of the Project Site.[1] **Table 4.B-1** shows that, according to published data, the most stringent applicable standards (state 1-hour standard of 9 parts per hundred million (pphm) and the federal 8-hour standard of 8 pphm) were not exceeded in San Francisco between 2006 and 2010. While the San Francisco data may not fully reflect the unique meteorological environment of Brisbane nor the proximity of site-specific stationary and roadway sources, they do present the nearest available benchmark that is most applicable to regional pollutants such as ozone. This data thus presents a reference point to what the pollutants of greatest concern are in the region and the degree to which the area is out of attainment with specific air quality standards. In addition, BAAQMD guidance focuses on the contribution of a project's emissions, both in terms of mass thresholds and, for $PM_{2.5}$, concentration thresholds and does not require addition of background values to project emissions to determine the significance of impacts.

Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. As shown in Table 4.B-1, the more stringent state CO standards were not exceeded between 2006 and 2010. Measurements of CO indicate hourly maximums ranging between 15 to 25 percent of the more stringent state standard, and maximum 8-hour CO levels that are approximately 30 percent of the allowable 8-hour standard.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from manmade and natural sources. Particulate matter is measured in two size ranges: PM_{10} for particles less than 10 microns in diameter, and $PM_{2.5}$ for particles less than 2.5 microns in diameter. In the Bay Area Basin, motor vehicles generate about one-half of the air basin's particulates, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction

[1] While BAAQMD did operate a monitoring station in Hunters Point, this station only operated for a single year beginning in 2004 and its data would not reflect recent regulatory efforts to improve air quality over the past eight years.

TABLE 4.B-1
SUMMARY OF SAN FRANCISCO AIR QUALITY MONITORING DATA (2006–2010)

Pollutant	Most Stringent Applicable Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured[a]				
		2006	2007	2008	2009	2010
Ozone						
- Days 1-hour Std. Exceeded		0	0	0	0	0
- Max. 1-hour Conc. (pphm)	>9 pphm[b]	5	6	8	7	8
- Days 8-hour Std. Exceeded		0	0	0	0	0
- Max. 8-hour Conc. (pphm)	>7 pphm[c]	5	5	7	6	5
Carbon Monoxide (CO)						
- Days 1-hour Std. Exceeded		0	0	0	0	ND
- Max. 1-hour Conc. (ppm)	>20 ppm[b]	2.9	2.7	5.7	4.3	ND
- Days 8-hour Std. Exceeded		0	0	0	0	0
- Max. 8-hour Conc. (ppm)	>9 ppm[b]	2.1	1.6	2.3	2.9	1.4
Suspended Particulates (PM_{10})						
- Days 24-hour Std. Exceeded[d]		3	2	0	0	0
- Max. 24-hour Conc. (µg/m^3)	>50 µg/m^3 [b]	**61**	**70**	41	36	39
Suspended Particulates ($PM_{2.5}$)						
- Days 24-hour Std. Exceeded[e]		3	5	0	1	3
- Max. 24-hour Conc. (µg/m^3)	>35 µg/m^3 [c]	**54**	**45**	29	**36**	**45**
- Annual Average (µg/m^3)	>12 µg/m^3 [b]	9.7	8.7	9.8	9.7	10.5
Nitrogen Dioxide (NO_2)						
- Days 1-hour Std. Exceeded		0	0	0	0	0
- Max. 1-hour Conc. (pphm)	>25 pphm[b]	11	7	6	6	9
Sulfur Dioxide (SO_2)						
- Days 24-hour Std. Exceeded		0	0	0	ND	ND
- Max. 24-hour Conc. (ppb)	>40 ppb[b]	6	6	4	ND	ND

NOTES:
Bold values are in excess of applicable standard. "NA" indicates that data is not available.
conc. = concentration; ppm = parts per million; pphm = parts per hundred million; ppb=parts per billion;
µg/m3 = micrograms per cubic meter
ND = No data or insufficient data.

a Number of days exceeded is for all days in a given year, except for particulate matter. PM10 and PM2.5 are monitored every six days and therefore the number of days exceeded is out of approximately 60 annual samples.
b State standard, not to be exceeded.
c Federal standard, not to be exceeded.
d Based on a sampling schedule of one out of every six days, for a total of approximately 60 samples per year.
e Federal standard was reduced from 65 µg/m3 to 35 µg/m3 in 2006.

SOURCE: BAAQMD, 2012a.

are other sources of such fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the CARB, studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks," and studies of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children." The CARB also reports

that statewide attainment of particulate matter standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California (CARB, 2007).

Among the criteria pollutants that are regulated, particulates represent a serious ongoing health hazard. As long ago as 1999, BAAQMD was reporting, in its *CEQA Guidelines*, that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area Basin. Compelling evidence suggests that $PM_{2.5}$ is by far the most harmful air pollutant in the Bay Area Basin in terms of the associated impact on public health. A large body of scientific evidence indicates that both long-term and short-term exposure to $PM_{2.5}$ can cause a wide range of health effects (e.g., aggravating asthma and bronchitis, causing visits to the hospital for respiratory and cardiovascular symptoms, and contributing to heart attacks and deaths) (BAAQMD, 2012b).

Table 4.B-1 shows that exceedances of the state PM_{10} standard have routinely occurred in San Francisco. It is estimated that the state 24-hour PM_{10} standard of 50 micrograms per cubic meter ($\mu g/m^3$) was exceeded on up to 30 days per year between 2006 and 2010.[2] BAAQMD began monitoring $PM_{2.5}$ concentrations in San Francisco in 2002. The federal 24-hour $PM_{2.5}$ standard was not exceeded until 2006, when the standard was lowered from 65 $\mu g/m^3$ to 35 $\mu g/m^3$. It is estimated that the state 24-hour $PM_{2.5}$ standard was exceeded on up to 72 days per year between 2006 and 2010. The state annual average standard was not exceeded between 2005 and 2009.

Nitrogen Dioxide (NO_2)

NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. Table 4.B-1 shows that the standard for NO_2 is being met in the Bay Area Basin, and pollutant trends suggest that the air basin will continue to meet these standards for the foreseeable future. In 2010, the U.S. EPA implemented a new 1-hour NO_2 standard presented in **Table 4.B-2** (U.S. EPA, 2010).

Sulfur Dioxide (SO_2)

SO_2 is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease (BAAQMD, 2012b). Table 4.B-1 shows that the standard for SO_2 is being met in the Bay Area Basin, and pollutant trends suggest that the air basin will continue to meet these standards for the foreseeable future. In 2010, the U.S. EPA implemented a new 1-hour SO_2 standard presented in Table 4.B-2.

[2] PM_{10} is sampled every sixth day; therefore, actual days over the standard can be estimated to be six times the numbers listed in the table.

TABLE 4.B-2
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

Pollutant	Averaging Time	State SAAQS[a]		(Federal) NAAQS[b]	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1 hour	0.09 ppm	N	NA	See Note c
	8 hour	0.07 ppm	U[d]	0.075 ppm	N/Marginal
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO2)	1 hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	NA	0.053 ppm	A
Sulfur Dioxide (SO2)	1 hour	0.25 ppm	A	0.075	A
	24 hour	0.04 ppm	A	0.14	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM_{10})	24 hour	50 µg/m3	N	150 µg/m3	U
	Annual	20 µg/m3[f]	N	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24 hour	NA	NA	35 µg/m3	N
	Annual	12 µg/m3	N	15 µg/m3	A
Sulfates	24 hour	25 µg/m3	A	NA	NA
Lead	30 day	1.5 µg/m3	A	NA	NA
	Cal. Quarter	NA	NA	1.5 µg/m3	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8 hour	See Note g	A	NA	NA

NOTES:
A = Attainment; N = Nonattainment; U = Unclassified; NA = Not Applicable, no applicable standard; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

[a] SAAQs = state ambient air quality standards (California). SAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

[b] NAAQs = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the three-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM_{10} standard is attained when the three-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour $PM_{2.5}$ standard is attained when the three-year average of the 98th percentile is less than the standard.

[c] The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005.

[d] This state 8-hour ozone standard was approved in April 2005 and became effective in May 2006.

[e] State standard = annual geometric mean; national standard = annual arithmetic mean.

[f] In June 2002, the CARB established new annual standards for $PM_{2.5}$ and PM_{10}.

[g] Statewide visibility reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

SOURCE: BAAQMD, 2010; U.S. EPA, 2010.

Lead

Leaded gasoline (phased out in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which puts children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California. On October 15, 2008, the U.S. EPA strengthened the National Ambient Air Quality Standard for lead by lowering it from1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. The U.S. EPA revised the

monitoring requirements for lead in December 2010. These requirements focus on airports and large urban areas resulting in an increase in 76 monitors nationally (U.S. EPA, 2012a).

Toxic Air Contaminants (TACs)

TACs are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

TACs do not have ambient air quality standards, but are regulated by BAAQMD using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated and considered together with information regarding the toxic potency of the substances, to provide quantitative estimates of health risks.[3]

In addition to monitoring criteria pollutants, both BAAQMD and the CARB operate TAC monitoring networks in the San Francisco Bay Area. The nearest BAAQMD ambient TAC monitoring station to the Project Site is the station at 16th and Arkansas Streets in San Francisco. When TAC measurements at this station are compared to ambient concentrations of various TACs for the Bay Area Basin as a whole, the cancer risks associated with mean TAC concentrations in San Francisco are similar to those for the Bay Area Basin as a whole. Therefore, the estimated average lifetime cancer risk resulting from exposure to TAC concentrations monitored at the San Francisco station do not appear to be any greater than for the Bay Area Basin as a region.

BAAQMD provides two public source inventories of TAC emissions sources within its jurisdiction. The first is its TAC Annual Report, the most recent of which was published in 2007. The most recent source is its recently released (May 2012) Google Earth-based inventory of stationary source risks and hazards. This latter source indicates six permitted TAC sources within the Project Site and nine sources within 1,000 feet of the Project Site boundary. These sources and their BAAQMD-identified cancer risks are presented in **Table 4.B-3**.

Diesel Particulate Matter (DPM)

The CARB identified DPM as a toxic air contaminant in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways and rail lines with diesel locomotive operations. The

[3] In general, a health risk assessment is required if BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk, then the applicant is subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects, calculating the increased risk of cancer as a result of exposure to one or more TACs.

TABLE 4.B-3
STATIONARY SOURCES OF TACS WITHIN 1,000 FEET OF THE PROJECT SITE

	Name of Source	Address	Cancer Risk (in one million)	Chronic Health Index[a] (Unit less ratio value)	$PM_{2.5}$ Concentration (micrograms/ cubic meter)
Sources on the Project Site					
1	Sunquest Properties	Brisbane Landfill	54.50	0.103	0.479
2	Kinder Morgan Tank Farm (Permit operator name: Santa Fe Pacific Pipeline)	950 Tunnel Avenue	26.38	0.0	0.007
3	Brisbane Recycling	5 Beatty Avenue	0	0	4.88
4	Tiger's Auto Body and Paint	23 Industrial Way	0	0	0
5	Super Tech Body Shop	370 Industrial Way	0	0.003	0
6	Sunquest Properties (Brisbane Landfill)	Bayshore Boulevard. and Sunnydale Avenue	0	0	0
7	Recology Sunset Scavenger	Beatty Road	0	0.001	0
8	SF Recycling & Disposal	Beatty Rd and Tunnel Avenue			
9	Recology Sunset Scavenger	501 Tunnel Avenue	47.83	0.017	92.100
Sources off the Project Site					
10	InterMune	3260 Bayshore Boulevard	23.50	0.008	0.005
11	PG&E Martin	3150 Geneva Avenue	0	0	0
12	View Rite	455 Allen Street	0	0.001	0
13	Bayshore Chevron	2690 Bayshore Boulevard	0.26	0.004	0
14	7-11	2700 Bayshore Boulevard	0.55	0.009	0.001
15	Leland Cleaners	151 Leland Avenue	37.50	0.100	0

NOTE:

[a] Chronic non-cancer risk is determined by dividing the estimated annual average concentration of a pollutant by the Reference exposure level assigned to that pollutant by the California Office of Environmental Health Hazard Assessment. For one pollutant this ratio is referred to as the Hazard Quotient (HQ). HQs for pollutants targeting the same organ system are added to determine the total Hazard Index (HI).

estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other toxic air pollutant routinely measured in the region. The risk from diesel particulate matter as determined by the CARB declined from 750 in one million in 1990 to 570 in one million in 1995; by 2000, the CARB estimated the average statewide cancer risk from DPM at 540 in one million (CARB, 2009; American Cancer Society, 2009).

Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. The CARB community health risk assessments and regulatory programs have produced air quality information about certain types of facilities for consideration by local authorities when siting new residences, schools, day care centers, parks and playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing

health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals (CARB, 2005).

In 2000, the CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk in 2020 as compared with the diesel risk in 2000. Additional regulations apply to new trucks and to diesel fuel. Subsequent regulation of diesel emission by the CARB include the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Offroad Diesel Vehicle Regulation and the New Offroad Compression Ignition Diesel Engines and Equipment Program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel powered equipment. Despite these reduction efforts, the CARB recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. The CARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones," and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary the CARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level (CARB, 2005).

Odor Emissions

Facilities that are typically identified as sources of odor emissions in the Project Site vicinity would include the former landfill on the Project Site itself and the Recology (Sanitary Fill) solid waste transfer station. In a recent presentation for a conference of the California Integrated Waste Management Board, BAAQMD identified the status of odor complaints from active and inactive landfills. The Brisbane Landfill was not listed as having been a source of odor complaints within the last five years. The Recology transfer station receives and temporarily holds solid waste before the waste is disposed outside the county. Wastes are stored within an enclosed building. The operator employs a misting system with a chemical product for odor control.

BAAQMD was contacted to review the odor complaint history of the following facilities in the Project site vicinity: Recology/Sunset Scavenger; Sunquest Properties/Brisbane Landfill; SF Recycling and Disposal; and Brisbane Recycling. According to BAAQMD records, these facilities have received no odor complaints within the last three years (BAAQMD, 2011a).

Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young, those with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory

diseases. Land uses such as schools, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces overall exposure to pollutants. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions.[4]

BAAQMD defines sensitive receptors as children, adults and seniors occupying or residing in residential dwellings, schools, colleges and universities, daycares, hospitals, and senior-care facilities. Workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees (BAAQMD, 2011b).

Sensitive land uses surrounding the Project Site include residences, parks, and schools, and are presented in **Figure 4.B-1**. Single-family homes within the Northeast Ridge development are located 0.5 mile west of the proposed recycled water plant and 1,000 feet west of the existing and proposed research and development uses. Single-family residences on Santa Clara Street are located 1,700 feet southwest of Lagoon Road and the Project Site boundary.

Single-family homes on Linda Vista Drive and Bayshore Child Care Service in Daly City are located approximately 1,000 feet west of the proposed institutional/civic/cultural land uses. Single-family homes on Wheeler and Tocoloma Avenues in San Francisco are located approximately 800 feet northeast of proposed residential and retail land uses and 500 feet north of proposed retail uses and the Recology expansion area.

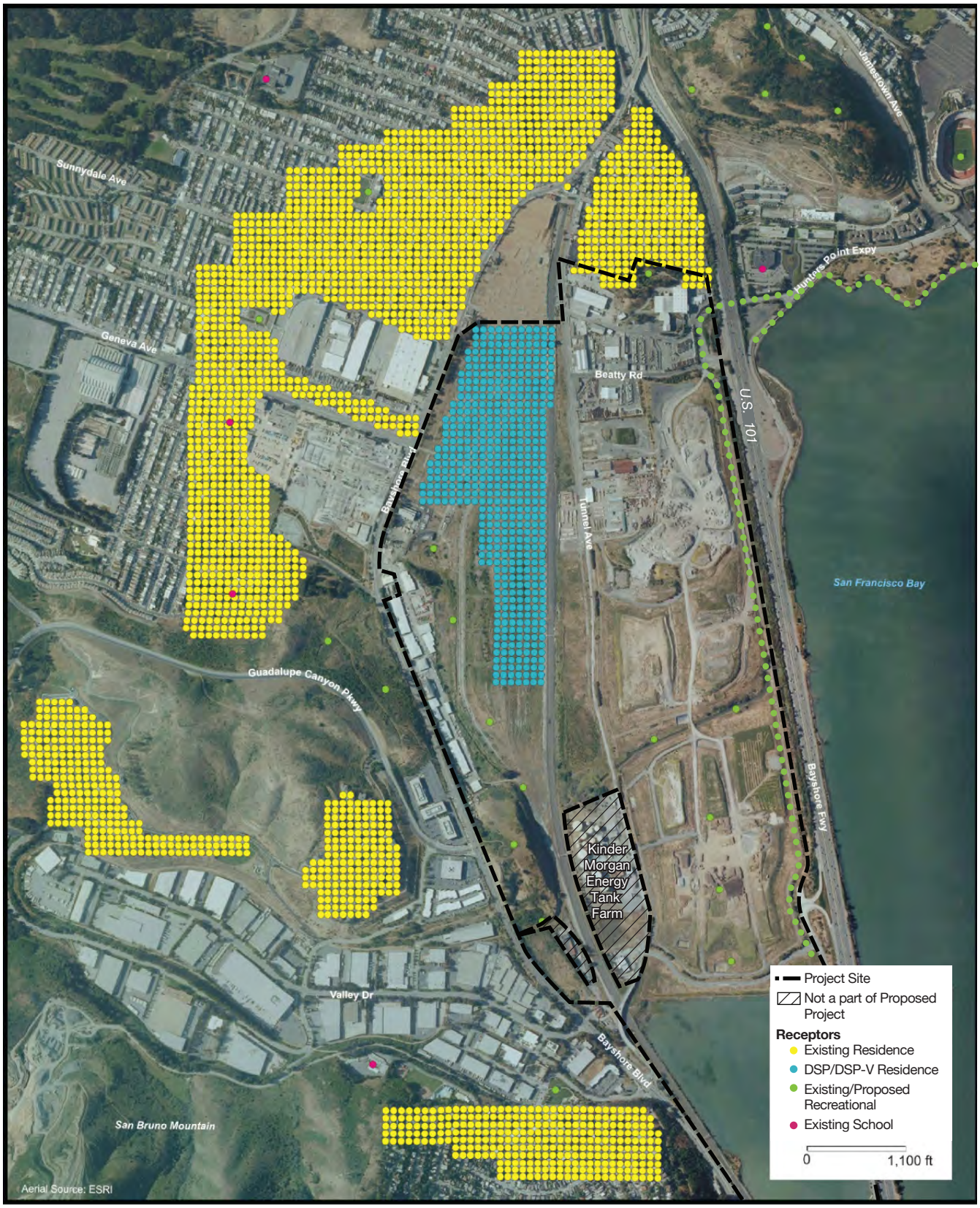
4.B.3 Regulatory Setting

Project Site development must comply with federal, state, regional, and local regulations. This section discusses these requirements to the extent that they will affect the way development occurs with the Project Site.

Federal Regulations

The 1970 Clean Air Act (last amended in 1990) required that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled in order to achieve all standards by the deadlines specified in the Clean Air Act. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an

[4] The factors responsible for variation in exposure are also often similar to factors associated with greater susceptibility to air quality health effects. For example, poorer residents may be more likely to live in crowded substandard housing and be more likely to live near industrial or roadway sources of air pollution.



SOURCE: KB Environmental Sciences, Inc., 2012

Brisbane Baylands . 206069

Figure 4.B-1
Existing and Proposed
Sensitive Receptor Locations

adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards before adverse health effects are observed.

The current attainment status for the San Francisco Bay Area Air Basin, with respect to federal standards, is summarized in Table 4.B-2. In general, the Bay Area Basin experiences low concentrations of most pollutants when compared to federal standards, except for ozone and particulate matter (PM_{10} and $PM_{2.5}$), for which standards are exceeded periodically.

In June 2004, the Bay Area Basin was designated as a marginal nonattainment area of the national 8-hour ozone standard.[5] The U.S. EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 parts per million (ppm) effective May 27, 2008. In April 2012, the U.S. EPA designated the Bay Area Basin as a marginal nonattainment region for the 2008 0.75 ppm ozone standard (U.S. EPA, 2012b). The Bay Area Basin is in attainment for other criteria pollutants, with the exception of the 24-hour standards for PM_{10} and $PM_{2.5}$, for which the Bay Area Basin is designated as "Unclassified." "Unclassified" is defined by the Clean Air Act Amendments as any area that cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

State Regulations

Although the federal Clean Air Act established national ambient air quality standards, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in California, there is considerable diversity between the state and national ambient air quality standards, as shown in Table 4.B-2. California ambient standards tend to be at least as protective as national ambient standards and are often more stringent.

In 1988, California passed the California Clean Air Act (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards. As indicated in Table 4.B-2, the Bay Area Basin is designated as "nonattainment" for state ozone, PM_{10}, and $PM_{2.5}$ standards. For other pollutants, the Bay Area Basin is either unclassified or designated as being in "attainment."

The California Clean Air Act requires each air district in which state air quality standards are exceeded to prepare a plan that documents reasonable progress towards attainment. A three-year update is required. In the Bay Area Basin, this planning process is incorporated into its Clean Air Plan.

5 "Marginal nonattainment area" means an area designated marginal nonattainment for the 1-hour national ambient air quality standard for ozone.

Regional Regulations

BAAQMD is the regional agency responsible for air quality regulation within the San Francisco Bay Area Basin. BAAQMD regulates air quality through its planning and review activities. BAAQMD has permit authority over most types of stationary emission sources and can require stationary sources to obtain permits, and can impose emission limits, set fuel or material specifications, or establish operational limits to reduce air emissions. BAAQMD regulates new or expanding stationary sources of toxic air contaminants.

For state air quality planning purposes, the Bay Area Basin is classified as a serious non-attainment area for ozone. The "serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the Bay Area Basin update the *Clean Air Plan* every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The Bay Area Basin's record of progress in implementing previous measures must also be reviewed. On September 15, 2010, BAAQMD adopted the most recent revision to the Clean Air Plan. The goals of the 2010 Clean Air Plan are:

- Update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on PM_{10} and $PM_{2.5}$, TACs, and GHGs, in a single, integrated plan;
- Review progress in improving air quality in recent years; and
- Establish emission control measures to be adopted or implemented in the 2009−2012 timeframe.

In December 1999, BAAQMD adopted its *CEQA Guidelines – Assessing the Air Quality Impacts of Projects and Plans,* as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. The *BAAQMD CEQA Guidelines* is an advisory document and local jurisdictions are not required to utilize the methodology outlined therein. The document describes the criteria that BAAQMD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for use in determining whether projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. BAAQMD adopted new thresholds of significance (BAAQMD thresholds) on June 2, 2010, to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. BAAQMD also released new *CEQA Guidelines* in May 2011, which advise lead agencies on how to evaluate potential air quality impacts with the adopted new thresholds of significance.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that BAAQMD had failed to comply with CEQA when it adopted its 2010 thresholds of significance. While the court did not determine whether or not the thresholds were valid, it did find that the adoption of the

thresholds was a project under CEQA, and therefore that BAAQMD should have conducted environmental review. As a result, the court set aside the thresholds and ordered BAAQMD to cease dissemination of them until it had complied with CEQA. BAAQMD has appealed the court's decision and the appeal is currently pending.

In compliance with the court's order, BAAQMD is no longer recommending that the thresholds be used as a generally applicable measure of a project's significant air quality impacts, and lead agencies are not required to use these thresholds in their environmental documents. However, nothing in the court's decision prohibits an agency's use of the thresholds to assess the significance of a project's air quality impacts. Therefore, based on substantial evidence, the analysis herein uses the BAAQMD thresholds and the methodologies in its 2012 *Air Quality CEQA Guidelines* (updated in May 2012) to determine the significance of Project Site development-related impacts with respect to air pollutant emissions.

Local Regulations

The Community Health and Safety Element of the City of Brisbane 1994 General Plan contains 16 policies related to air quality. Eight of these policies concern the City's relationship with BAAQMD and other county and state agencies and/or do not relate directly to the City's consideration of local development projects**.** The remaining eight policies and associated programs are as follows:

Policy 193: As a part of land use development analysis, consider the impacts on air resources that will be generated by a project through mobile sources.

Program 193a: Consider the design of roadways, transit facilities, bikeways and pedestrian access in all subdivisions, specific plans and other land use proposals to evaluate whether and to what extent the design addresses air quality issues.

Program 193b: In conjunction with land use development applications and CEQA review, evaluate whether a proposal may have a significant effect on air quality because of mobile emissions. Require environmental impact analysis and mitigation plans and monitoring, as appropriate.

Program 193c: Discourage drive-up service windows and similar uses that generally result in vehicle idling.

Policy 194: Attempt to minimize dependence on automobile travel by encouraging transit, bicycle and pedestrian alternatives and incorporating alternatives to the automobile in land use planning and project design.

Program 194a: Provide park-and-ride facilities to facilitate use of transit.

Program 194b: Provide bicycle and pedestrian access to all areas of the City to provide alternatives to automobile use.

Program 194c: Require all new development to include design principles that are transit oriented and otherwise reduce dependence on the automobile.

Policy 197: Continue to improve existing roadways to reduce congestion in order to reduce emissions generated by "stop-and-go" driving.

Program 197a: Use traffic management systems, such as signage and timed signals, to facilitate traffic flow and reduce congestion.

Policy 198: Actively participate in and support the development and implementation of transportation system management plans (TSMs) and transportation demand management measures (TDMs).

Program 198a: Support the implementation of transportation demand management measures by private businesses, such as transit and carpool subsidies, preferential carpool/vanpool parking, flexible work schedules and ride matching services.

Program 198b: Encourage the installation of bicycle lockers, changing rooms and showers, guaranteed ride home, the provision of onsite support services in private businesses and other measures to reduce vehicular trips by employees.

Program 198c: Consider providing incentives as a part of land use development permit approvals for the use of TSM and TDM measures.

Policy 199: Encourage County and regional transportation agencies to improve transit and transportation systems in ways that reduce mobile source emissions.

Policy 202: Incorporate emissions control practices into City ordinances as appropriate.

Program 202a: Strictly enforce the City's Grading Ordinance provisions for dust control.

Program 202b: Require that demolition and construction projects conform to the BAAQMD recommended dust control measures.

Program 202c: On a periodic basis, review the City's ordinance requirements to assure conformance with BAAQMD standards.

Policy 203: Consider issues of stationary emissions in land use planning and project review.

Program 203a: As part of land use planning, establish buffer zones between sensitive receptors and significant emissions sources, including uses that cause offensive odors or dust.

Program 203b: In conjunction with any surface mining, oil and gas operation or industrial development land use permit, place strict conditions for compliance with best management practices for control of dust, odors and other emissions that have air quality impacts.

4.B.4 Impacts and Mitigation Measures

Significance Criteria

Appendix G of the CEQA Guidelines indicates that a project would have a significant effect on the environment if it were to:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

- Result in cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

The above five thresholds contained in the Appendix G checklist of the state CEQA Guidelines are applied to both construction-related activities and operational activities of the proposed project, as well as to cumulative impact assessment, as suggested by BAAQMD's *CEQA Air Quality Guidelines*. Consequently, while there are five discrete thresholds set forth in CEQA Appendix G, because they are applied to multiple scenarios, eleven significance criteria are used in this analysis. These criteria were developed by BAAQMD in its *2012 CEQA Air Quality Guidelines* and include separate methodologies for assessing criteria air pollutants, toxic air contaminants, and localized pollutants (CO and $PM_{2.5}$). Thus, Project Site development would have a significant air quality impact if any of the components described in Table 1-1 would:

- Result in localized construction dust-related air quality impacts;
- Generate construction emissions that would result in a considerable net increase of criteria pollutants and precursors for which the air basin is in nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter (PM2.5) during construction;
- Generate operational emissions that would result in a considerable net increase of criteria pollutants and precursors for which the air basin is in nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter (PM2.5) during Project operation;
- Expose persons (new receptors) to substantial levels of TACs, which may lead to adverse health;
- Expose sensitive receptors to substantial carbon monoxide (CO) concentrations;
- Create objectionable odors affecting a substantial number of people;
- Conflict with or obstruct implementation of the applicable air quality plan or lead to adverse health effects;
- Together with anticipated cumulative development in the Bay Area Basin, contribute to regional criteria pollutants; or
- Cumulatively expose persons to substantial levels of toxic air contaminants (TACs), which may lead to adverse health effects.

Impact Assessment Methodology

As described above, BAAQMD issued *CEQA Air Quality Guidelines*, including Air Quality CEQA Thresholds of Significance, in June 2010 and updated in May 2011. These Guidelines (*CEQA Air Quality Guidelines* were updated in May 2012) provide significance thresholds for considering whether a project would have a significant air quality impact. The Guidelines, published for assessing impacts relative to these thresholds, also provide recommended procedures for evaluating potential air quality impacts during the environmental review process. Additionally, in its 2011 update to the significance thresholds, BAAQMD had adopted new risk and hazard exposure thresholds for the siting of new sensitive receptors. Although the 2010 and 2011 BAAQMD significance thresholds have been set aside (see discussion in Subsection 4.B.3, above), these thresholds are based on substantial evidence identified in the 2009 *Draft Options and Justification Report for CEQA Thresholds of Significance* and are therefore used within this document. Methodologies used for analysis of air quality impacts follow the guidance contained in the BAAQMD *CEQA Air Quality Guidelines* updated in May 2012 (BAAQMD, 2012b).

Health Risks and Hazards

A health risk assessment (HRA)[6] was conducted to evaluate the cancer risks and non-cancer related health effects associated with exposure to TACs emitted as a result of Project Site development, and is included in Appendix D. Cancer risks[7] are evaluated based on 70-year exposure, pursuant to BAAQMD's *Health Risk Screening Analysis Guidelines* (BAAQMD, 2005). Non-cancer health risks[8] include adverse health effects from both acute (highest 1-hour) and chronic (average annual) exposure. BAAQMD also requires the analysis of $PM_{2.5}$ concentrations.[9] The HRA methods are designed to estimate the highest possible, or "upper bound" risks to the most sensitive members of the population (i.e., children, elderly, infirm), as well as those that are potentially exposed to TACs on a routine and prolonged basis (i.e., residents). Air toxics associated with the various Project components set forth in Table 1-1 include diesel particulate matter (DPM) emissions from construction and operations of Project components. The results of the HRA are used in the analysis of TAC impacts.

The HRA was conducted in accordance with technical guidelines developed by federal, state, and regional agencies, including California Environmental Protection Agency (CalEPA), California Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots Program Guidance* (2003), and the BAAQMD *Health Risk Screening Analysis Guidelines* (BAAQMD, 2005).

6 An analysis designed to predict the generation and dispersion of air toxics in the outdoor environment, evaluate the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

7 Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances. Cancer risks are expressed as the chances in one million of contracting cancer, for example, 10 cancer cases among one million people exposed.

8 Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various non-carcinogens from the Project to published reference exposure levels (RELs) that can cause adverse health effects.

9 The BAAQMD guidance stipulates inclusion of $PM_{2.5}$ exhaust emissions only in this analysis (i.e., fugitive dust emissions are addressed through employing BAAQMD's *Best Management Practices* found under the discussion of Impact 4.B-1.

The HRA is based on estimated TAC emissions from development of the Project Site and the length of time those living, working, and recreating in the vicinity of the Project Site could be exposed to TAC emissions. Actual exposures are not measured, but rather are modeled using sophisticated software that uses local meteorology and topography to predict the dispersion of TACs from their source and the resulting concentrations at receptors. The models tend to be conservative, both in terms of the estimated exposure, and the toxic effects of the substances to which people are exposed; thus, the models tend to overestimate the adverse health effect.

For this EIR, the HRA focused on the health impacts that operation of Project site development components identified in Table 1-1 would have on the new residences proposed as part of the DSP and DSP-V scenarios, as well as impacts on the existing residences, hospitals, and schools that would result for each of the four Project Site development scenarios. The methodology, calculations, and supporting data for the HRA are included in Appendix D.

According to CalEPA, a HRA should not be interpreted as actual expected rates of cancer or other potential health effects, but rather as estimates of potential risk or likelihood of adverse effects based on current knowledge, under a number of highly conservative assumptions and the best assessment tools currently available.

Construction-related impacts associated with implementation of Project site development-related infrastructure improvements described in the Chapter 3, *Project Description*, are included in the analysis below.

Significance Thresholds Applied in the Analysis of Criteria Pollutants and TACs

Construction Impacts

- *Construction-related emissions of fugitive dust, including PM_{10} that would not be addressed or controlled by Best Management Practices would be considered to be a significant criteria pollutant impact.*

BAAQMD's recommended approach to addressing localized construction dust-related air quality impacts (fugitive PM_{10} dust emissions) is a best management practices (BMP) approach. This approach is identified both in the 1999 BAAQMD *CEQA Guidelines*, as well as in the 2009 Justification Report. If BAAQMD-recommended BMPs, which are tiered based on the size of the construction site (less than or greater than four acres), are incorporated into project construction, the resulting impacts are determined to be less than significant.

- *Construction-related emissions of 54 pounds per day of ROG, NOx, or $PM_{2.5}$ and 82 pounds per day of PM_{10} would be considered to be a significant criteria pollutant impact.*

Project Site development-related construction emissions would be considered to result in a considerable net increase of a criteria pollutant and have a significant air quality impact if average daily construction-related emissions would exceed 54 pounds (25 kilograms) of ROG, NOx, or

$PM_{2.5}$ (non-inclusive of fugitive dust[10]) or exceed 82 pounds (37 kilograms) of PM_{10} (non-inclusive of fugitive dust[11]). The thresholds for PM_{10} and $PM_{2.5}$ are inclusive only of construction exhaust emissions. BAAQMD guidance regarding construction-related emission of fugitive dust identifies implementation of BMPs as its threshold of significance (as discussed above).

- *Construction activities that would increase cancer risk exposure by 10 in one million, contribute hazard indices by a ratio of 1.0 or increase local concentrations of $PM_{2.5}$ by 0.3 micrograms per cubic meter would be considered to result in a significant construction-related impact with regard to risks and hazards.*

The 2010 BAAQMD *CEQA Thresholds* state that a project would have a significant air quality impact if construction activities would result in an incremental increase in localized annual average concentrations of $PM_{2.5}$ exceeding 0.3 micrograms per cubic meter ($\mu g/m^3$) within a 1,000-foot radius from the property line of the construction area or a receptor. A project would also have a significant air quality impact if it would expose persons to substantial levels of TACs (including DPM), such that the probability of contracting cancer for the Maximally Exposed Individual (MEI)[12] exceeds 10 in one million or if it would expose persons to TACs such that a non-cancer Hazard Index of 1.0 would be exceeded. A Hazard Index (HI) is a summation of the non-cancer hazard quotients for all chemicals to which an individual is exposed.

Project-Level Operational Impacts

- *Operational emissions of 54 pounds per day of ROG, NOx, or $PM_{2.5}$, 82 pounds per day of PM_{10}, or CO emission leading or contributing to an exceedance of the State Ambient Air Quality Standard would be considered to be a significant criteria pollutant impact.*

For project-level impact operational analyses, the BAAQMD 2009 Justification Report identifies various thresholds and tests of significance. For ROG, NOx and $PM_{2.5}$, a net increase equal to or greater than 10 tons per year (maximum annual) or 54 pounds average daily emissions is considered significant, while for PM_{10} a net increase equal to or greater than 15 tons per year (maximum annual) or 82 pounds average daily emissions is considered significant.

For CO emissions, an increase would be considered to be significant if it leads to or contributes to CO concentrations exceeding the State Ambient Air Quality Standard.

- *A project that would increase an existing receptor or expose a new receptor to a cancer risk exposure by 10 in one million, contribute hazard indices by a ratio of 1.0 or increase local concentrations of $PM_{2.5}$ by 0.3 micrograms per cubic meter would be considered to result in a significant construction-related impact with regard to risks and hazards.*

Under the thresholds identified in the BAAQMD Justification Report, a project would also be considered to have a significant air quality impact if it would result in an incremental increase in localized annual average concentrations of $PM_{2.5}$ exceeding 0.3 micrograms per cubic meter from project operations. A project would also be considered to have a significant air quality impact if

10 Fugitive dust consists of very small liquid and solid particulate matter that is suspended in the air by the wind and human activities. Fugitive dust originates primarily from the soil.
11 Fugitive dust is PM suspended in the air by the wind and human activities. It originates primarily from the soil and is not emitted from exhaust pipes, vents, or stacks.
12 The MEI is the person with the highest exposure in a given population.

project operations would expose persons to substantial levels of TACs, such that the probability of contracting cancer for the MEI exceeds 10 in one million or if would expose persons to TACs such that a non-cancer Hazard Index of 1.0 would be exceeded.

Cumulative Impacts

The BAAQMD Justification Report states that if the individual emissions of a project results in an increase in ROG, NOx, $PM_{2.5}$, or PM_{10} of exceeding the project-level significance criteria, then it would also be considered to contribute considerably to a significant cumulative effect.

With regard to cumulative impacts from $PM_{2.5}$, a significant cumulative air quality impact would be considered to occur if localized annual average concentrations of $PM_{2.5}$ would exceed 0.8 micrograms per cubic meter at any receptor from project operations in addition to existing emission sources and cumulative emissions sources within a 1,000-foot radius of the property line of the source or receptor.

With regard to cumulative impacts from TACs, a significant cumulative air quality impact would be considered to occur if the probability of contracting cancer for the MEI would exceed 100 in 1 million or if the project would expose persons to TACs such that a non-cancer chronic HI of 10.0 would be exceeded at any receptor as a result of project operations, in addition to existing emission sources and cumulative emissions sources within a 1,000 foot radius of the project site. However, a project's construction or operational impacts would be considered to result in a considerable contribution to an identified cumulative health risk impact if the project's construction or operation activities would exceed the project-level health risk significance thresholds identified above.

Cumulative air quality impacts are also addressed in Chapter 6, *Significant Unavoidable Impacts, Growth Inducement, Cumulative Impacts, and Other CEQA Considerations*, of this EIR.

Project Impacts and Mitigation Measures

Impact 4.B-1: Would the Project result in localized construction dust-related air quality impacts?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
SM	SM	SM	SM

SU = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

As described in Chapter 3, *Project Description*, Project Site development includes demolition of numerous structures in preparation for construction of the new structures. Project related demolition, soil transport, remediation, grading and other construction activities at the Project Site would cause wind-blown dust that would generate particulate matter releases into the atmosphere. Fugitive dust includes not only PM_{10} and $PM_{2.5}$, but also larger particles that can represent a nuisance impact. Dust can be an irritant and cause watering eyes or irritation to the lungs, nose and throat. Demolition, excavation and other construction activities can cause wind-blown dust to add to particulate matter in the local atmosphere. Although there are federal standards for air pollutants and state and regional air quality

control plans, air pollutants continue to have impacts on human health throughout the country. CalEPA has found that particulate matter exposure can cause health effects at levels lower than national standards. The current health burden of particulate matter demands that, where possible, public agencies take feasible available actions to reduce sources of particulate matter exposure.

For mitigation of fugitive dust emissions, the BAAQMD *CEQA Air Quality Guidelines* recommend following the current BMP approach, which has been a pragmatic and effective approach to control fugitive dust emissions. The guidelines note that individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent and conclude that projects that implement construction BMPs would reduce fugitive dust emissions to a less than significant level. BMPs for controlling fugitive dust from construction are identified in **Mitigation Measure 4.B-1**.

Mitigation

Mitigation Measure 4.B-1: To reduce fugitive dust emissions, the following provisions shall be incorporated into construction specifications for all site-specific development projects within the Project Site. These measures would reduce fugitive dust emissions primarily during soil movement, grading and demolition activities but also during vehicle and equipment movement on unpaved project sites.

Mitigation Measure Applicability by Scenario			
DSP	**DSP-V**	**CPP**	**CPP-V**
✓	✓	✓	✓
✓ = measure applies - = measure does not apply			

Basic Controls that Apply to All Construction Sites

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. A publicly visible sign shall be posted with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

Conclusion: For fugitive dust emissions, the BMP approach has been a pragmatic and effective approach to the control of fugitive dust emissions. Studies have demonstrated (Western Regional Air Partnership, U.S.EPA) that the application of BMPs at construction sites have significantly controlled fugitive dust emissions. Individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent. In the aggregate, BMPs substantially reduce fugitive dust emissions from construction sites. These studies support BAAQMD recommendations that projects implementing construction BMPs reduce fugitive dust emissions to a less than significant level (BAAQMD, 2009). As a result, BAAQMD *CEQA Guidelines* dating back to before 1999 require implementation of these BMPs for determinations that impacts would be less than significant. Thus, implementation of these BMPs for construction impacts of development as extensive as that required for the Project Site would result in the same less than significant level of impacts as a large number of smaller projects that cumulatively represent the same amount of development as is proposed for the Project Site. Because BAAQMD BMPs for fugitive dust control would be required for all construction activities and implementation of those practices, Project Site development would not result in fugitive dust impacts. Therefore, this impact is less than significant with mitigation.

Impact 4.B-2: Would the Project generate construction emissions that would result in a cumulatively considerable net increase of criteria pollutants and precursors for which the air basin is in nonattainment under an applicable federal or state ambient air quality standard?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
SU	SU	SU	SU

SU = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

Project Site development-related construction would generate air emissions through the use of heavy-duty construction equipment, from vehicle trips hauling materials, and from construction workers traveling to and from the Project Site. Mobile source emissions, primarily NO_X, would be generated from the use of construction equipment such as excavators, bulldozers, wheeled loaders, and cranes. During the finishing phase, paving operations and the application of asphalt, architectural coatings (i.e., paints) and other building materials would release ROG. The assessment of construction air quality impacts considers each of these sources, and recognizes that construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions.

Project Site development would occur over 20 years. The timing and sequence of development would depend upon numerous factors, including future market conditions, public investment, and private initiative and investment. Development of the Project Site is anticipated to generally occur starting in the western portion of the site (between Bayshore Boulevard and the Caltrain railroad tracks) because of the availability of existing roadways and infrastructure systems adjacent to the west side of the Project Site. Development of the eastern portion of the Project Site (between Caltrain tracks and US Highway 101) would follow initial increments of development to

the west as roadway improvements increase connectivity across the Project Site and access to US Highway 101.

Construction activities are assumed to occur over a minimum 20-year period, beginning generally in 2015. Preparation of the site for Phase 1 development is projected to occur by 2020 and this is what was assumed in the estimation of construction related emissions for the western portion of the Project Site. Timing of development within the eastern portion of the Project Site has not yet been determined, but for the purposes of estimating air quality emissions was assumed to occur between 2020 and 2026.

Site preparation would include site remediation, infrastructure backbone and geotechnical stabilization required for the first phase of development as well as remediation and infrastructure work required for development of the Project Site. Remediation of contaminated soil and groundwater at the site would begin prior to grading of the site. Additionally, approximately 1,130,000 cubic yards of soil would be trucked to off-site locations; another 2,600,000 cubic yards of soils materials would be moved within the Project Site.

Construction emissions from Project Site development were estimated using the URBEMIS2007 emissions inventory model, which separates the construction process into stages: demolition, grading, trenching, asphalt work, structural building, and architectural coating. The demolition phase considered the demolition and debris off-haul of 16 warehouses along Industrial Way in the western portion of the Project Site and six lumber yard buildings in the northeastern portion of the Project Site. Post-processing of URBEMIS2007 construction emission estimates was conducted to account for recently updated vehicle (EMFAC2011) and equipment (OFFROAD) emission factors and load factors now available.

The grading phase is separated into emissions from fugitive dust, emissions from off-road equipment, emissions from on-road trucks off-hauling soil, and worker vehicle trips. Calculations for the grading phase of development within the western portion of the Project Site assumed export of approximately 2.6 million cubic yards of fill being from the landfill area to the railyard area by truck (although conveyor over the Caltrain tracks is another option being explored), while development of the eastern portion of the Project Site assumed off-site export of 1,130,000 cubic yards of soil to Ox Mountain Landfill. The trenching phase of Project Site development consists of worker vehicle trips and off-road equipment emissions. The asphalt application phase estimates emissions from off-road equipment, on-road trucks worker vehicle trips, as well as off-gassing[13] of ROG emissions from asphalt (primarily parking lot and roadway surfaces). Emissions from the structural building phase would consist of off-road equipment emissions, worker vehicle trips and vendor vehicle trips. Grading and remediation activities were assumed to have been conducted prior to these other activities. Trenching activities were assumed to occur simultaneously with the earliest portion of building construction. Asphalt application and architectural coating application were assumed to occur simultaneously at the end of the building construction. The equipment mix and construction duration for each stage and scenario are

13 "Off gassing" refers to the release of gaseous compounds from a solid material such as asphalt.

detailed in URBEMIS2007 printout sheets, which are included in Appendix D. Additionally spreadsheets for truck transport emissions using EMFAC2011 emission factors and post-processing of URBEMIS construction emissions are also in Appendix D.

Daily construction-related criteria pollutant emissions for development within the western portion of the Project Site are presented in **Table 4.B-4** and in **Table 4.B-5** for the eastern portion of the Project Site. Construction activities in the western portion of the Project Site would be the same for the DSP and DSP-V scenarios which would therefore have the same emissions in the early portion of Project Site development. The same conclusion holds true for the CPP and CPP-V scenarios. As shown in the tables, the DSP and DSP-V scenarios would have greater construction related NOx emissions than the CPP and CPP-V scenarios. This difference is the result of the residential component of the DSP and DSP-V scenarios which require substantially more materials and associated vendor trips and construction workers than non-residential construction.

As shown, maximum regional emissions would exceed the BAAQMD daily significance thresholds for ROG and NOx during throughout Project Site construction. For ROG, the predominant construction activity associated with the significant emissions would be application of architectural coatings. For NOx, the predominant construction activity associated with the significant emissions would be off road diesel equipment and on-road haul trucks during demolition, and grading and vendor trucks during building construction.

TABLE 4.B-4
AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS
WESTERN PORTION OF PROJECT SITE

	Average Daily Construction Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Developer Sponsored Plan (and Entertainment Variant) Construction				
2014	4.19	47.66	1.86	1.70
2015	16.87	**95.28**	1.50	1.36
2016	15.31	**85.54**	1.34	1.27
2017	**134.59**	**62.76**	0.56	0.49
2018	**120.65**	13.11	0.58	0.54
2019	**121.00**	8.24	0.30	0.28
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	No	No
Community Proposed Plan (and Recology Variant) Construction				
2014	4.74	53.92	2.09	1.91
2015	11.07	**61.41**	1.01	0.92
2016	10.04	**55.45**	0.90	0.85
2017	**82.54**	**57.76**	1.39	1.26
2018	**73.56**	12.49	0.59	0.54
2019	4.24	8.24	0.30	0.28
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	No	No

SOURCE: ESA, 2012.

TABLE 4.B-5
AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS
EASTERN PORTION OF PROJECT SITE

	Average Daily Construction Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Developer Sponsored Plan (DSP) Construction				
2020	3.11	45.80	0.98	0.91
2021	10.81	**82.36**	1.15	1.05
2022	10.77	**82.12**	1.15	1.05
2023	**137.74**	**87.46**	1.62	1.48
2024	**67.51**	23.98	0.64	0.58
2025	**67.25**	23.96	0.63	0.58
2026	0.93	21.15	0.41	0.38
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	No	No
Developer Sponsored Plan Entertainment Variant (DSP-V) Construction				
2020	4.03	**55.06**	1.20	1.12
2021	18.02	**201.22**	2.66	2.47
2022	17.96	**200.52**	2.65	2.46
2023	**347.92**	**217.79**	4.03	3.66
2024	**168.15**	24.12	0.64	0.59
2025	**167.51**	24.10	0.64	0.59
2026	0.99	21.19	0.42	0.38
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	No	No
Community Proposed Plan (CPP) Construction				
2020	3.11	45.80	0.98	3.41
2021	5.78	**73.23**	0.92	0.86
2022	5.76	**73.02**	0.92	0.85
2023	**88.02**	**84.10**	1.48	1.36
2024	42.14	23.94	0.63	0.58
2025	41.98	23.92	0.63	0.58
2026	0.92	21.14	0.41	0.38
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	No	No
Community Proposed Plan Recology Variant (CPP-V) Construction				
2020	3.11	45.801	0.98	0.86
2021	5.61	**70.69**	0.90	0.83
2022	5.59	**70.49**	0.89	0.83
2023	**91.37**	**81.46**	1.45	1.33
2024	44.01	23.95	0.63	0.58
2025	43.84	23.92	0.63	0.58
2026	0.92	21.14	0.41	0.38
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	No	No

SOURCE: ESA, 2012.

Conclusion: Each scenario would have a significant impact in relation to regional construction impacts. Implementation of **Mitigation Measures 4.B-2a** and **4.B-2b** is recommended to reduce the significance of the impact.

Mitigation

Mitigation Measure 4.B-2a: To reduce construction vehicle emissions, the following provisions shall be incorporated into construction specifications for all projects on the Baylands:

Mitigation Measure Applicability by Scenario			
DSP	**DSP-V**	**CPP**	**CPP-V**
✓	✓	✓	✓
✓ = measure applies - = measure does not apply			

- Idling times shall be minimized either by shutting diesel-powered or gasoline-powered equipment off when not in use or reducing the maximum idling time of diesel-powered equipment to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. It shall be the contractor's responsibility to ensure that all equipment has been checked by a certified mechanic and determined to be running in proper condition prior to operation.

- All construction contract specifications shall include a requirement that on-road diesel trucks used to transport spoils consist of 2007 or newer model-year trucks with factory built engines. All on-road diesel trucks shall be required to have emission control labels as specified in 13 CCR 2183(c) or any subsequent updates to this CARB regulation, whichever is more stringent. The construction contract specifications shall require that the contractor submit to the City a comprehensive inventory of all on-road trucks used to haul spoils. The inventory shall include each vehicle's license plate number, the engine production year, and a notation of whether the truck is in possession of an emission control label as defined in 13 CCR. The contractor shall update the inventory and submit it monthly to the City throughout the duration of the project.

Mitigation Measure 4.B-2b: All construction contract specifications shall include a requirement that off-road construction equipment used for site improvements shall be equipped with Tier 3 (Tier 2 if greater than 750 hp) diesel engines or better. All diesel generators used for project construction must meet Tier 4 emissions standards. If new emissions standards are adopted by U.S. EPA during project construction, construction contract specifications shall incorporate whichever standard is more stringent.

Conclusion with Mitigation: Even with the inclusion of **Mitigation Measures 4.B-2a and 4.B-2b**, implementation of Project Site development would continue to result in significant air quality impacts from construction-related ROG and NOx emissions. Therefore, this impact would be significant and unavoidable. The following discussion provides an explanation for this conclusion.

The U.S. EPA has established a schedule for emission improvements to new non-road (or off-road) diesel engines in 1994 for engines over 37 kW (50 hp). The resulting 1998 regulation

introduced Tier 1 standards for equipment under 37 kW and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. The Tier 1-3 standards are met through advanced engine design, with no or only limited use of exhaust gas after treatment (oxidation catalysts). Tier 3 standards for NOx and TOG are similar in stringency to the 2004 standards for highway engines; however Tier 3 standards for PM were never adopted.

The Tier 4 standards require that emissions of PM and NOx be further reduced by about 90 percent. Such emission reductions can be achieved through the use of control technologies—including advanced exhaust gas after treatment—similar to those required by the 2007-2010 standards for highway engines. Construction emissions estimated in Impact 4.B-2 assume a statewide average fleet mix of construction equipment that includes a relatively small percentage of Tiered construction equipment, reflecting the recent implementation schedule of the rule and the existing fleet of non-Tiered equipment.

To the extent that the above listed types of equipment are used for project construction, those equipment types would be required to meet NOx emission standards equivalent to Tier 3 (Tier 2 if greater than 750 hp) engines, if equipment meeting those standards is available in the subcontractor's fleet, or is available as rental equipment. It should be noted that for specialty equipment types (e.g., impact and vibratory pile drivers and cranes), newer equipment meeting these standards might not be available, and it may not be feasible for construction contractors to modify their current, older equipment. Therefore, this mitigation measure may be infeasible for these specialty equipment types. Sources of NOx emissions vary by construction activity and during the building phase emissions are primarily from vendor truck trips which would not be under the control of the applicant to mitigate. Tier 3 reductions in NOx emissions are reported to be approximately 40 percent depending on engine size. Tier 4 equipment, which would reduce NOx emissions by 90 percent, is not yet widely available for off-road equipment as the CARB has delayed implementation, but likely could be available for construction activities late in the 20-year buildout of the Project Site.

Tables 4.B-6 and **4.B-7** present construction emissions after implementation of **Mitigation Measures 4.B-2a** and **4.B-2b**. As can be seen from these tables, mitigation measures would reduce significant ROG emissions to a less-than-significant level for all scenarios except for the eastern portion of the Project Site in the DSP-V scenario. For ROG, the predominant construction activity associated with the significant emissions would be application of architectural coatings. While NOx emissions from off-road construction equipment would be reduced by up to 40 percent, post-mitigation construction-related emissions of NOx would remain above BAAQMD thresholds and represent a significant and unavoidable air quality impact for Project Site development. For NOx, the predominant construction sources associated with the significant emissions would be off-road diesel equipment and on-road haul trucks during demolition, and grading and vendor trucks during building construction. As shown in the tables, the DSP and DSP-V scenarios would have greater construction related NOx emissions than the CPP and CPP-V scenarios. This difference is the result of the residential component of the DSP and DSP-V scenarios, which require substantially more materials and associated vendor trips and construction workers that non-residential construction.

TABLE 4.B-6
MITIGATED AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS WESTERN PORTION OF SITE

	Average Daily Construction Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Developer Sponsored Plan (and Entertainment Variant) Construction				
2014	4.19	36.10	0.74	0.68
2015	16.87	**89.90**	1.25	1.13
2016	15.31	**80.66**	1.13	1.06
2017	49.18	**56.75**	0.42	0.37
2018	37.37	10.04	0.16	0.14
2019	36.91	7.08	0.11	0.10
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	No	Yes	No	No
Community Proposed Plan (and Recology Variant) Construction				
2014	4.74	40.82	0.85	0.78
2015	11.07	**56.03**	0.76	0.68
2016	10.04	50.57	0.69	0.65
2017	30.96	49.63	0.85	0.76
2018	23.27	12.49	0.16	0.15
2019	2.64	7.08	0.11	0.10
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	No	No	No	No

SOURCE: ESA, 2012.

TABLE 4.B-7
MITIGATED AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS WESTERN PORTION OF SITE

	Average Daily Construction Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Developer Sponsored Plan (DSP) Construction				
2020	3.11	38.66	0.54	0.50
2021	10.81	**78.80**	1.06	0.96
2022	10.77	**78.57**	1.05	0.96
2023	48.81	**80.72**	1.31	1.18
2024	21.22	21.80	0.27	0.25
2025	21.06	21.79	0.27	0.25
2026	0.93	21.79	0.27	0.25
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	No	Yes	No	No
Developer Sponsored Plan Entertainment Variant (DSP-V) Construction				
2020	4.03	43.40	0.51	0.47
2021	18.02	**197.99**	2.58	2.39
2022	17.96	**197.30**	2.57	2.39
2023	**123.99**	**211.05**	3.71	3.37
2024	51.58	21.94	0.28	0.26
2025	51.20	21.93	0.28	0.26
2026	0.99	21.93	0.24	0.22
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	No	No

TABLE 4.B-7 (Continued)
MITIGATED AVERAGE DAILY CONSTRUCTION-RELATED EMISSIONS WESTERN PORTION OF SITE

	Average Daily Construction Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Community Proposed Plan (CPP) Construction				
2020	3.11	37.84	0.47	0.44
2021	5.78	**73.23**	0.92	0.86
2022	5.76	**73.02**	0.92	0.86
2023	33.12	**80.72**	1.29	1.18
2024	13.56	21.77	0.27	0.25
2025	13.47	21.76	0.27	0.25
2026	0.92	20.07	0.23	0.21
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	No	Yes	No	No
Community Proposed Plan Recology Variant (CPP-V) Construction				
2020	3.11	37.84	0.47	0.44
2021	5.61	**67.47**	0.81	0.75
2022	5.59	**67.28**	0.81	0.75
2023	33.96	**74.72**	1.13	1.03
2024	14.13	21.77	0.27	0.25
2025	14.03	21.76	0.27	0.25
2026	0.92	20.07	0.23	0.21
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	No	Yes	No	No

SOURCE: ESA, 2012.

Impact 4.B-3: Would construction of the Project expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$)?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
LTS	LTS	LTS	LTS

SU = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, CPP-V

Project construction activities would produce DPM and $PM_{2.5}$ emissions due to combustion equipment such as loaders, backhoes, and cranes, as well as haul truck trips. These emissions result in elevated concentrations of DPM and $PM_{2.5}$ at nearby receptors (both new and existing residences). These elevated concentrations could lead to an increase in the risk of cancer or other health impacts. Consequently, a health risk assessment was performed to determine the extent of increased cancer risks and hazard indices at the maximally exposed receptors. The health risk assessment was based on recommended methodology of the state Office of Environmental Health Hazard Assessment and adopted by BAAQMD. The cancer risk to residential receptors assumes exposure occurs 24-hours per day for 350 days per year. For children at school sites, exposure is assumed to occur 10-hours per day for 180 days (or 36 weeks) per year. Cancer risk to residential receptors based on exposure duration of the construction period.

Additionally, cancer risk estimates also incorporate age sensitivity factors. This approach provides updated calculation procedures that factor in the increased susceptibility of infants and children to carcinogens as compared to adults. For estimating cancer risks for residential receptors over a 70 year lifetime, the incorporation of the ASFs results in a cancer risk adjustment factor of 1.7.

The following health risk assessment results are based on Project Site development emissions without implementation of **Mitigation Measure 4.B-1a**. Health impacts related to Project Site development, while already less than significant, would be even less with the incorporation of **Mitigation Measure 4.B-1a** which would reduce prolonged idling of diesel equipment. Detailed assumptions and methodology for the HRA are included in Appendix D**.**

DSP

A summary of the health impacts related to construction of the DSP is found in **Table 4.B-8**.

TABLE 4.B-8
CONSTRUCTION-RELATED HEALTH IMPACTS
DEVELOPER-SPONSORED PLAN

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
New Residence (adult/child)	0.10/0.42	<0.01	0.01	<0.01
School Children	0.03	<0.01	0.01	0.01
Existing Residence (adult/child)	0.27/2.10	<0.01	0.01	0.02
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

As shown in Table 4.B-8, the maximum cancer risk for the new residence-adult and residence-child associated with development of the Project Site (located within the western portion of the Project Site) would be 0.1 and 0.4 persons per million, respectively. The cancer risk associated with the maximum exposed new residences is due to construction activities in the eastern portion of the Project Site.

The maximum cancer risk for an existing adult or child in a residential dwelling unit (residence-adult and residence-child receptors, respectively) (located to the north-northeast of the Project Site near Little Hollywood Park) would be 0.3 and 2.1 persons per million, respectively. The cancer risk associated with the maximum exposed existing residence (the residence experiencing the greatest cancer risk) is mostly due to construction activities in the western portion of the Project Site and as a result of the prevailing wind direction. The maximum cancer risk for a child at school (school-child receptor) would be less than 0.1 persons per million. Thus, the cancer risk due to construction activities alone would be below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of development of the Project Site would be less than significant. The acute HI would be less than 0.1 at all receptors, and would be below the BAAQMD threshold of 1.0. Therefore, the impact of Project Site development would be less than significant.

The maximum annual $PM_{2.5}$concentrations would be less than 0.1 $\mu g/m^3$ for the new residences associated with the development of the Project Site under the DSP scenario, school children at proposed onsite schools, and the existing residences. The construction-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 $\mu g/m^3$, and therefore is considered less than significant. No mitigation is required.

DSP-V

A summary of the health impacts related to construction of the DSP-V scenario is found in **Table 4.B-9**.

TABLE 4.B-9
CONSTRUCTION-RELATED HEALTH IMPACTS
DEVELOPER-SPONSORED PLAN WITH ENTERTAINMENT VARIANT

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
New Residence (adult/child)	0.24/1.03	0.01	0.02	0.03
School Children	0.04	<0.01	0.01	0.01
Existing Residence (adult/child)	0.31/2.10	<0.01	0.03	0.02
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

As shown in Table 4.B-9, the maximum cancer risk for the new residence-adult and residence-child associated with the DSP-V scenario (located within the Phase I area) would be 0.2 and 1.0 persons per million, respectively. The cancer risk associated with the maximum exposed new residence is due to Phase II construction activities.

The maximum cancer risk for an existing residence-adult and residence-child (located to the north-northeast of the Project Site near Little Hollywood Park) would be 0.3 and 2.1 persons per million, respectively. The cancer risk associated with the maximum exposed existing residence is mostly due to construction activities in the western portion of the Project Site and as a result of the prevailing wind direction. The maximum cancer risk for a school-child receptor would be less than 0.1 persons per million. Thus, the cancer risk due to construction activities alone would be below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of Project Site development under the DSP-V scenario would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI

would be below the BAAQMD threshold of 1 and the impact of the Project Site development would be less than significant.

The maximum annual $PM_{2.5}$ concentrations would be less than 0.1 $\mu g/m^3$ for the proposed residences associated with Project Site development, as well as for school children, and existing residences. The construction-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and hence is considered to be less than significant. No mitigation is required.

CPP

A summary of the health impacts related to construction of the CPP scenario is found in **Table 4.B-10**.

TABLE 4.B-10
CONSTRUCTION-RELATED HEALTH IMPACTS
COMMUNITY PROPOSED PLAN

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
School Children	0.03	<0.01	0.01	<0.01
Existing Residence (adult/child)	0.34/2.70	<0.01	0.01	0.02
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

As shown in Table 4.B-10, the maximum cancer risk for an existing residence-adult and residence-child (located to the north-northeast of the Project Site near Little Hollywood) would be 0.3 and 2.7 persons per million, respectively. The cancer risk associated with the maximum exposed existing residence is mostly due to construction activities in the western portion of the Project Site and as a result of the prevailing wind direction. The maximum cancer risk for a school-child receptor would be less than 0.1 persons per million. Thus, the cancer risk due to construction activities alone would be below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of the Project Site development would be less than significant.

The maximum annual $PM_{2.5}$ concentrations would be less than 0.1 $\mu g/m^3$ for school children and existing residences. The construction-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and therefore is considered less than significant. No mitigation is required.

CPP-V

A summary of the health impacts related to construction of the CPP-V scenario is found in **Table 4.B-11**.

TABLE 4.B-11
CONSTRUCTION-RELATED HEALTH IMPACTS
COMMUNITY PROPOSED PLAN WITH RECOLOGY VARIANT

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
School Children	0.03	<0.01	0.01	<0.01
Existing Residence (adult/child)	0.34/2.70	<0.01	0.01	0.02
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

As shown in Table 4.B-11, the maximum cancer risk for an existing residence-adult and residence-child (located to the north-northeast of the Project Site near Little Hollywood) would be 0.3 and 2.7 persons per million, respectively. The cancer risk associated with the maximum exposed existing residence is mostly due to construction activities in the western portion of the Project Site and as a result of the prevailing wind direction. The maximum cancer risk for a school-child receptor would be less than 0.1 persons per million. Thus, the cancer risk due to construction activities alone would be below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of the Project Site development would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of the Project Site development would be less than significant.

The maximum annual $PM_{2.5}$ concentrations would be less than 0.1 $\mu g/m^3$ for school children and existing residences. The construction-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 $\mu g/m^3$, and therefore is considered less than significant. No mitigation is required.

Summary of Construction-Related Impacts for All Scenarios

A summary of the cancer risks related to Project Site development is found in **Table 4.B-12**.

Conclusion: Project Site development would have a less-than-significant impact in relation to this criterion. No mitigation is required.

TABLE 4.B-12
CONSTRUCTION-RELATED CANCER RISKS FOR THE FOUR SCENARIOS

Scenario	New Receptor	School	Existing Receptor (adult/child)	BAAQMD Threshold	Significant?
Developer-Sponsored Plan (DSP)	0.10/0.42	0.03	0.27/2.10	10	No
Developer-Sponsored Plan with Entertainment Variant (DSP-V)	0.24/1.03	0.04	0.31/2.10	10	No
Community Proposed Plan (CPP)	-	0.03	0.34/2.70	10	No
Community Proposed Plan with Recology Variant (CPP-V)	-	0.03	0.34/2.70	10	No

SOURCE: KBE, 2012 (provided in Appendix D).

Impact 4.B-4: Would the Project generate operational emissions that would result in a considerable net increase of criteria pollutants and precursors for which the air basin is in nonattainment under an applicable federal or state ambient air quality standard?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
SU	SU	SU	SU

S = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

Project Site development would result in an increase in criteria air pollutant and precursor emissions, including ROG, NOx, PM_{10} and $PM_{2.5}$ from a variety of emissions sources, including onsite area sources (e.g., natural gas combustion for space and water heating, landscape maintenance, use of consumer products such as hairsprays, deodorants, cleaning products, etc.) and mobile on-road sources. Exhaust emissions from on-road vehicle traffic associated with Project Site development were initially calculated by using the URBEMIS2007 program, as recommended by the May 2011 version of the BAAQMD *CEQA Guidelines*. URBEMIS2007 calculates area source emissions based on the size and types of land uses. In September of 2011, the CARB released updated emission factors (EMFAC2011) that are an update to those embedded in the URBEMIS2007 model. The URBEMIS2007 model does not allow the user to manipulate emission factors internally. Consequently, a post-processing adjustment was made to the URBEMIS2007 calculations to account for the recent availability of EMFAC2011 emission factors.

Table 4.N-12 of the transportation analysis estimates that development of the Project Site would result in approximately 44,985 net new vehicle trips per day for the DSP scenario, approximately 42,446 net new vehicle trips per day for the DSP-V scenario, approximately 82,176 net new vehicle trips per day for the CPP scenario, and approximately 79,196 net new vehicle trips per day for the CPP-V scenario.

As discussed in Section *4.N Transportation*, a Transportation Demand Management (TDM) program would be developed and implemented under each scenario to reduce use of single-occupant vehicles and to increase the use of rideshare, transit, bicycle and walk modes for trips to and from, as well as within the Project Site. Due to uncertainty pertaining to quantifying the effectiveness of implementing TDM strategies, the travel demand analysis used as a basis for calculating vehicle emissions does not assume additional trip reduction due to specific TDM strategies beyond those associated with internal, pass-by, and diverted linked trips.

Because development of the Project Site would generate more than 100 vehicle trips during both the AM and PM peak hours and, per San Mateo City/County Association of Governments (C/CAG) guidelines, preparation and implementation of a TDM plan is required. Conformance with the C/CAG requirement would be met within the Project Site by developing and implementing a TDM Program (see **Mitigation Measure 4.N-13** of the Transportation Section in this document) designed to reduce use of single-occupant vehicles and to increase the use of rideshare, transit, bicycle and walk modes for trips to and from, as well as within the Project Site. TDM plans would be prepared for each applicable site-specific development project within the Project Site (generating 100 trips or more) as it undergoes development review. Each site-specific development project within the Project Site would be required to mitigate the impacts of net increases in trip generation, including, if required, development of a TDM program.

C/CAG has identified acceptable TDM measures with equivalent numbers of peak-hour trip credits that will be granted with implementation of each measure, including, but not limited to, a shuttle program, employee parking cash out, infill development, and a guaranteed ride home program. Measures can be mixed and matched so that the total number of trip credits is equal to or greater than the new peak-hour trips generated by the project. These programs, once implemented, must be on-going for the occupied life of the development. Programs may be substituted, with prior approval of C/CAG, as long as the number of reduced trips remains the same.

Table 4.B-13 summarizes daily mobile and onsite area emissions of criteria pollutants that will be generated by Project Site development in 2040 assuming buildout vehicle trip generation and compares them with BAAQMD significance thresholds. As indicated in Table 4.B-13, Project Site development-related operational emissions of ROG, NOx, PM_{10} and $PM_{2.5}$ would exceed the BAAQMD significance threshold. Consequently, mitigation measures are required.

Table 4.B-14 summarizes Project Site development-generated daily maximum annual mobile and onsite area emissions of criteria pollutants for each of the development scenarios in 2040. As indicated in Table 4.B-14, Project Site development-related operational emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ would exceed the BAAQMD significance threshold. Consequently, mitigation measures are required.

Conclusion: Project Site development would have a significant impact in relation to this criterion. Implementation of **Mitigation Measure 4.B-4** is recommended for Project Site development to reduce the significance of this impact.

TABLE 4.B-13
AVERAGE DAILY OPERATIONAL EMISSIONS

	Average Daily Operational Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Developer Sponsored Plan (DSP) Operations				
Area Sources	292.82	86.28	2.10	2.07
Mobile Sources	117.99	101.06	596.60	102.54
Total Emissions	**410.81**	**187.34**	**598.70**	**108.61**
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	Yes	Yes
Developer Sponsored Plan Entertainment Variant (DSP-V) Operations				
Area Sources	289.94	88.24	2.10	2.08
Mobile Sources	111.80	94.88	559.98	96.23
Total Emissions	**401.74**	**183.12**	**562.08**	**98.31**
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	Yes	Yes
Community Proposed Plan (CPP) Operations				
Area Sources	48.57	52.68	0.09	0.09
Mobile Sources	173.21	173.60	1021.56	175.53
Total Emissions	**221.78**	**226.28**	**1021.65**	**175.62**
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	Yes	Yes
Community Proposed Plan Recology Variant (CPP-V) Operations				
Area Sources	44.90	48.76	0.09	0.09
Mobile Sources (non-Recology)	165.41	165.77	975.48	167.59
Mobile emissions (Recology)	0.37	4.98	1.50	0.10
Total Emissions	**210.68**	**219.51**	**977.07**	**167.78**
BAAQMD Threshold	54	54	82	54
Exceeds Threshold?	Yes	Yes	Yes	Yes

SOURCE: ESA, 2012.

TABLE 4.B-14
MAXIMUM ANNUAL OPERATIONAL EMISSIONS

	Maximum Annual Operational Emissions (ton/year)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Developer Sponsored Plan (DSP) Operations				
Area Sources	53.36	11.30	0.02	0.02
Mobile Sources	20.50	14.12	108.89	18.70
Total Emissions	**73.86**	**25.42**	**108.91**	**18.72**
BAAQMD Threshold	10	10	15	10
Exceeds Threshold?	Yes	Yes	Yes	Yes
Developer Sponsored Plan Entertainment Variant (DSP-V) Operations				
Area Sources	52.81	11.66	0.03	0.03
Mobile Sources	19.38	13.25	102.18	17.57
Total Emissions	**72.19**	**24.91**	**102.21**	**17.60**
BAAQMD Threshold	10	10	15	10
Exceeds Threshold?	Yes	Yes	Yes	Yes

TABLE 4.B-14 (Continued)
MAXIMUM ANNUAL OPERATIONAL EMISSIONS

	Maximum Annual Operational Emissions (ton/year)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Community Proposed Plan (CPP) Operations				
Area Sources	8.95	9.62	0.02	0.02
Mobile Sources	30.80	24.27	186.45	32.04
Total Emissions	**39.75**	**33.89**	**186.47**	**32.06**
BAAQMD Threshold	10	10	15	10
Exceeds Threshold?	Yes	Yes	Yes	Yes
Community Proposed Plan Recology Variant (CPP-V) Operations				
Area Sources	8.28	8.91	0.02	0.02
Mobile Sources (Non-Recology)	29.28	**23.18**	178.02	30.58
Mobile Sources (Recology)	0.07	0.91	0.27	0.02
Total Emissions	**37.63**	**33.00**	**178.31**	**30.62**
BAAQMD Threshold	10	10	15	10
Exceeds Threshold?	Yes	Yes	Yes	Yes

SOURCE: ESA, 2012.

Mitigation

Mitigation Measure 4.B-4: The following measures identified in the 2012 BAAQMD *CEQA Guidelines* shall be implemented for site-specific development projects within the Project Site and shall be included, as applicable, into commercial leases, as well as Covenants, Codes, and Restrictions (CC&Rs) within the Project Site:

Mitigation Measure Applicability by Scenario			
DSP	**DSP-V**	**CPP**	**CPP-V**
✓	✓	✓	✓

✓ = measure applies
- = measure does not apply

- Provide free transit passes (e.g., Clipper Card for use on Caltrain, San Francisco Municipal Railway [Muni], and SAMTrans) to employees (for employers of 100 or more employees);
- Provide and maintain secure bike parking for commercial and industrial uses (at least one space per 20 vehicle spaces) as a condition of occupancy permit/tenancy contract;
- Provide and maintain showers and changing facilities for employees as a condition of final building permit;
- Provide information on transportation alternatives to employees as a condition of occupancy permit/tenancy contract;
- Establish a dedicated employee transportation coordinator for each site-specific development as a condition of occupancy permit/tenancy contract;
- Provide and maintain preferential carpool and vanpool parking for non-residential uses;
- Increase building energy efficiency by 20 percent beyond Title 24 (reduces NOx related to natural gas combustion);

- Require use of electrically powered landscape equipment through CC&Rs;
- Require only natural gas hearths in residential units as a condition of final building permit;
- Use low VOC architectural coatings in maintaining buildings through CC&Rs;
- Require smart meters and programmable thermostats;
- Meet Green Building Code standards in all new construction (reduces NOx related to natural gas combustion); and
- Install solar water heaters for all uses as feasible.

A majority of these measures could be included in the TDM plan that would be required of all project scenarios. Refer to **Mitigation Measure 4.N-13** of the Section 4.N, *Traffic and Circulation*, of this EIR.

Conclusion with Mitigation: Trip generation estimates for development of the Project Site used in this analysis included adjustments for development scale, density, and diversity of uses, distance to transit and design of the Project Site, as well as a robust number of alternative transportation trips (walk, bike, and transit) and carpooling. Therefore, many key elements of alternative mode strategies have been incorporated into the trip generation assumptions.

Mitigation Measure 4.B-4 would not result in the 86 to 92 percent reductions necessary (for PM_{10}) or 60 to 86 percent (for NOx and ROG) to reduce the impact to a less-than-significant level. This amount of traffic reduction exceeds the best reduction estimates for TDM programs (BAAQMD, 2012b). Consequently, implementation of Project Site development would still result in significant environmental effects on air quality and contribute substantially to an existing air quality violation (ozone precursors and particulate matter). Therefore, even with implementation of **Mitigation Measure 4.B-4**, this impact would remain significant and unavoidable for emissions of ROG NOX, PM_{10} and $PM_{2.5}$.

Impact 4.B-5: Would operation of the Project expose sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$)?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
LTS	LTS	LTS	LTS

SU = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

Operation of proposed Project Site development would produce DPM and $PM_{2.5}$ emissions due to motor vehicle traffic including employees, customers, deliveries, and new residences. These emissions would result in elevated concentrations of DPM and $PM_{2.5}$. These elevated concentrations could lead to an increase in the risk of cancer or other health impacts. A health risk assessment was performed to calculate the risks and hazards generated at the maximally exposed sensitive receptor, in accordance with technical guidelines developed by

federal, state, and regional agencies, including CalEPA, OEHHA *Air Toxics Hot Spots Program Guidance* (2003), and the BAAQMD *Health Risk Screening Analysis Guidelines* (2005).

The emissions associated with the HRA were based on the air quality calculations using URBEMIS2007 (version 9.2.4) and the information within the project description regarding project operations. The HRA used the AERMOD dispersion model and local meteorological data from San Francisco and Oakland which were provided by BAAQMD. Localized concentrations of DPM and $PM_{2.5}$ were modeled for the sensitive receptors presented in Figure 4.B-1. The concentrations of $PM_{2.5}$ are reported while the concentrations of DPM are used to estimate increased cancer risk and hazard indices based on exposure. Based on OEHHA recommendations, the cancer risk to residential receptors assumes exposure occurs 24 hours per day for 350 days per year. For children at school sites, exposure is assumed to occur 10 hours per day for 180 days (or 36 weeks) per year. Cancer risk to residential receptors based on a 70-year lifetime exposure. Cancer risk estimates for children at school sites are calculated based on 9 year exposure duration. Additionally, cancer risk estimates also incorporate age sensitivity factors. This approach provides updated calculation procedures that factor in the increased susceptibility of infants and children to carcinogens as compared to adults. For estimating cancer risks for residential receptors over a 70 year lifetime, the incorporation of the ASFs results in a cancer risk adjustment factor of 1.7.The impacts of Project Site development would be less than significant in relation to the criteria of BAAQMD.

DSP

A summary of the health impacts related to operations of the DSP scenario is found in **Table 4.B-15**.

TABLE 4.B-15
TRANSPORTATION-RELATED HEALTH IMPACTS
DEVELOPER-SPONSORED PLAN

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
New Residence (adult/child)	4.20/2.04	<0.01	<0.01	0.01
School Children	0.14	<0.01	<0.01	<0.01
Existing Residence (adult/child)	3.21/1.56	<0.01	<0.01	0.01
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

As shown above in Table 4.B-15, the maximum cancer risk for the new residence-adult and residence-child at the Project Site would be 4.2 and 2.0 persons per million, respectively. The maximum cancer risk for an existing residence-adult and residence-child (located to the north of the Project Site along Bayshore Boulevard) would be 3.2 and 1.6 persons per million, respectively. The maximum cancer risk for a school-child receptor would be 0.1 persons per million. Thus, the cancer risk would be below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be well below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant.

Maximum annual $PM_{2.5}$ concentrations would be 0.01 $\mu g/m^3$ for new residences proposed under this scenario, school children, and existing residences. The operation-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and therefore is considered less than significant. No mitigation is required.

DSP-V

A summary of the health impacts related to operations of the DSP-V scenario is found in **Table 4.B-16**.

TABLE 4.B-16
TRANSPORTATION-RELATED HEALTH IMPACTS
DEVELOPER-SPONSORED PLAN WITH ENTERTAINMENT VARIANT

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
New Residence (adult/child)	4.01/1.94	<0.01	<0.01	0.01
School Children	0.13	<0.01	<0.01	<0.01
Existing Residence (adult/child)	3.07/1.49	<0.01	<0.01	0.01
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

As shown above in Table 4.B-16, the maximum cancer risk for the new residence-adult and residence-child at the Project Site would be 4.0 and 1.9 persons per million, respectively. The maximum cancer risk for an existing residence-adult and residence-child (located to the north of the Project Site along Bayshore Boulevard) would be 3.1 and 1.5 persons per million, respectively. The maximum cancer risk for a school-child receptor would be 0.1 persons per million. Thus, the cancer risk would be below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be well below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant.

Maximum annual $PM_{2.5}$ concentrations would be 0.01 $\mu g/m^3$ for new residences proposed under this scenario, school children, and existing residences. The operation-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and hence is considered less than significant. No mitigation is required.

CPP

A summary of the health impacts related to operations of the CPP scenario is found in **Table 4.B-17**.

TABLE 4.B-17
TRANSPORTATION-RELATED HEALTH IMPACTS
COMMUNITY PROPOSED PLAN

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
School Children	0.25	<0.01	<0.01	<0.01
Existing Residence (adult/child)	5.85/2.84	<0.01	<0.01	0.02
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

As shown above in Table 4.B-17, the maximum cancer risk for an existing residence-adult and residence-child (located to the north of the Project Site along Bayshore Boulevard) would be 5.9 and 2.8 persons per million, respectively. The maximum cancer risk for a school-child receptor would be 0.3 persons per million. Thus, the cancer risk due to operations of Project site development components set forth in Table 1-1 would be below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be well below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant.

Maximum annual $PM_{2.5}$ concentrations would be 0.01 $\mu g/m^3$ for school children and for existing residences. The operation-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and therefore is considered less than significant. No mitigation is required.

CPP-V

A summary of the health impacts related to operations of the CPP-V scenario is found in **Table 4.B-18**.

As shown above in Table 4.B-18, the maximum cancer risk for an existing residence-adult and residence-child (located to the north of the Project Site along Bayshore Boulevard) would be 5.8 and 2.7 persons per million, respectively. The maximum cancer risk for a school-child receptor would be 0.2 persons per million. Thus, the cancer risk due to operations of Project Site development alone would be below the BAAQMD threshold of 10 per million and would be less than significant.

TABLE 4.B-18
TRANSPORTATION-RELATED HEALTH IMPACTS
COMMUNITY-PROPOSED PLAN WITH RECOLOGY VARIANT

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	$PM_{2.5}$ Concentration (µg/m3)
School Children	0.24	<0.01	<0.01	<0.01
Existing Residence (adult/child)	5.75/2.71	<0.01	<0.01	0.02
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of Project Site development would be less than significant.

The maximum annual $PM_{2.5}$ concentrations would be 0.01 µg/m^3 for school children and existing residences. The operation-related annual $PM_{2.5}$ concentration would be below the BAAQMD threshold of 0.3 µg/m^3 and hence is considered less than significant. No mitigation is required.

Summary of Impacts for All Scenarios

A summary of the cancer risks related to operations for each of the four scenarios is found in **Table 4.B-19**.

TABLE 4.B-19
TRANSPORTATION-RELATED CANCER RISKS FOR THE FOUR SCENARIOS

Scenario	New Receptor	School	Existing Receptor (adult/child)
Developer-Sponsored Plan	4.20/2.04	0.14	3.21/1.56
Developer-Sponsored Plan with Entertainment Variant	4.01/1.94	0.13	3.07/1.49
Community-Proposed Plan	-	0.25	5.85/2.84
Community-Proposed Plan with Recology Variant	-	0.24	5.75/2.71

SOURCE: KBE, 2012 (provided in Appendix D).

Conclusion: Operation of development within the Project site would not expose existing sensitive receptors to substantial concentrations of toxic air contaminants or respirable particulate matter ($PM_{2.5}$) or significant cancer risk. Therefore, each scenario would have a less-than-significant impact in relation to this criterion. No mitigation is required.

Impact 4.B-6: Would the Project expose persons (new receptors) to substantial levels of toxic air contaminants (TACs), which may lead to adverse health?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
LTS	LTS	LTS	LTS

SU = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

The BAAQMD *CEQA Guidelines* include standards and methods for determining the significance of health risk impacts for new receptors resulting from Project Site development. BAAQMD suggests that if a project is a place where people live, play or convalesce for extended periods of time, it should be considered a sensitive receptor. Examples include residences, schools, school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities. The method for determining health risk requires the review of health risk from permitted sources and major roadways in the vicinity of a project (i.e., within a 1,000-foot radius of the source), and comparing the risks from each of those sources individually to significance criteria to determine whether the health risk thresholds for new receptors are exceeded.

BAAQMD has developed a geo-referenced database of permitted emissions sources throughout the San Francisco Bay Area, and has developed the Stationary Source Risk & Hazard Analysis Tool (May 2011) for estimating cumulative health risks from permitted sources. Eight permitted sources are located within 1,000 feet of new residences associated with the Project Site and included in the cumulative analysis.

BAAQMD has also developed a geo-referenced database of major roadways throughout the San Francisco Bay Area and has developed the *Highway Screening Analysis Tool (*dated May 2011*)* for estimating cumulative health risks from roadways. US Highway 101 is located approximately 1,500 feet to the east to the proposed sensitive land uses of the Project Site. Thus, the health impacts from this roadway were not included in the cumulative analysis, consistent with BAAQMD methodology.

BAAQMD *CEQA Guidelines* also recommend the inclusion of surface streets with annual average daily traffic (AADT) of 10,000 or greater within 1,000 feet of a given project (BAAQMD, 2012b). Upon review the health impacts from Geneva Avenue with 18,900 AADT and located within 150 feet of the sensitive receptors (residences and schools) proposed for the Project Site in the DSP and DSP-V scenarios was included. Bayshore Boulevard with 25,800 AADT and located within 150 feet of the sensitive receptors proposed for the Project Site was also included in the analysis in the DSP and DSP-V scenarios. This analysis also addresses impacts related to the location of the proposed charter school under the CPP and CPP-V scenarios, as the location of the proposed charter school is the same as that proposed for school location south of Icehouse Hill under the DSP and DSP-V scenarios.

Operational impacts from Caltrain passing through the Project Site and use of the Bayshore Station were included. Emissions were based on the U.S. EPA's *Emission Factors for Locomotives* (December 1997). The health impacts were based on 96 trips per day for an existing total of 32 tons per year of DPM emissions and two tons per year by 2035 within the Caltrain route (approximately 52 miles) (Caltrain, 2009).

A summary of the health impacts for the new residences under the DSP and DSP-V scenarios is found in **Table 4.B-20**.

TABLE 4.B-20
HEALTH IMPACTS FROM STATIONARY, ROADWAY AND RAIL SOURCES FOR NEW RECEPTORS

Site #	Facility Type	Address	Cancer Risk (persons per million)	Hazard Impact	$PM_{2.5}$ Concentration (µg/m3)
2902	View Rite	455 Allan Street	0	0.001	0
G10024	Bayshore Chevron	2690 Bayshore Boulevard	4.07	0.0067	0
17835	PG&E - Martin	3150 Geneva Avenue	0	0	0
G2818	Seven Eleven	2700 Bayshore Boulevard	7.32	0.0121	0
4021	SFPP (Kinder Morgan)	950 Tunnel Avenue	0.17	0.011	0.0005
3520	Leland Cleaners	151 Leland Avenue	6.38	0.10	0
18394	InterMune	3260 Bayshore Boulevard	1.88	0.001	0.001
		Roadway Sources			
		Geneva Avenue	2.74	0.02	0.09
		Bayshore Boulevard	3.17	0.02	0.16
		Caltrain	<0.10	<0.01	<0.01
		Proposed Project (adult/child)	3.72/2.04	<0.01	0.01
		Highest Single Source Impact	7.32	0.10	0.16
		BAAQMD Significance Criteria (new receptor)	10	1	0.3
		Significant Impact?	No	No	No

SOURCE: KBE, 2012 (provided in Appendix D).

Notably, for individual projects/new receptors, the threshold of significance is based on the individual source with the highest cancer risk, $PM_{2.5}$ concentration, or hazard in comparison to other sources within the 1,000 foot radius of the receptor (BAAQMD, 2012b). Analysis of the cumulative impact of all sources on proposed new receptors is addressed in Impact 4.B-11.

The health risks from nearby sources in the area would have an impact on new residences associated with the DSP and DSP-V scenarios. The highest cancer risk from any of the nearby sources would be 7.32 persons per million (due to a nearby service station). Thus, the cancer risk for new receptors is below the BAAQMD threshold of 10 per million and would be less than significant.

The highest hazard index from nearby sources would be 0.10, below the BAAQMD threshold of 1.0, and the impact of the proposed residences within the Project Site would be less than significant. The highest annual $PM_{2.5}$ concentrations would be 0.16 $\mu g/m^3$ as a result of roadway traffic on Bayshore Boulevard. This $PM_{2.5}$ concentration at new residences would be below the BAAQMD threshold of 0.3 $\mu g/m^3$ and hence is considered less than significant.

Conclusion: Health impacts on sensitive receptors would be less than significant for Project Site development. No mitigation is required.

Impact 4.B-7: Would the Project expose sensitive receptors to substantial carbon monoxide concentrations?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
LTS	LTS	LTS	LTS

SU = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

Project Site development under each scenario would be consistent with the guidelines of the 2011 Congestion Management Program established by the City and County Association of Governments of San Mateo County (refer to Impact 4.N-1 in Section 4.N, *Traffic and Circulation*, of this EIR).

CO concentrations have declined substantially over the past decade, largely due to wintertime gasoline formulation requirements and no violations of the state or federal standard have been recorded in the Bay Area Basin for over 15 years. As a worst-case analysis, roadside CO concentrations were modeled for the intersection of Geneva Avenue and Bayshore Boulevard during cumulative conditions during the PM peak hour for the DSP-V scenario and event conditions. These roadways have the largest volumes of vehicle traffic in the vicinity of the Project Site while being within 1,000 feet of existing and proposed receptors. This modeling assumed a worst case background CO concentration of 5.7 ppm, the highest reading recorded at the San Francisco station in the past five years. Modeling also assumed worst case meteorology (wind speed of 0.5 meters per second and stability class G). Resultant roadside CO concentrations ranged from 5.7 ppm to 5.9 ppm, well below the state 1-hour standard of 20 ppm.

Worst-case Project Site development-related traffic would not lead to violations of the carbon monoxide standards, and therefore no further analysis was conducted for carbon monoxide impacts of development of the Project site at other intersections.

Conclusion: This impact would be less than significant for Project Site development. No mitigation is required.

Impact 4.B-8: Would the Project create objectionable odors affecting a substantial number of people?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
LTS	LTS	LTS	SM

SU = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

Odors are generally regarded as an annoyance rather than a health hazard, but objectionable odors affecting a substantial number of people are considered to be a significant impact under CEQA. Odors generated from landfills and composting facilities are typically associated with methane production from the anaerobic decomposition of waste. BAAQMD identifies landfills as an example of a land use that has a potential to generate considerable odors and establishes a screening distance of one mile from a sensitive receptor as one indicator of a potential odor impact that should be further examined. BAAQMD considers a substantial number of odor complaints, specifically,

more than five confirmed complaints per year averaged over the past three years[14] as the indication of an odor impact (BAAQMD, 2009). The Project Site is surrounded on three sides by residential uses. The eastern side of the Project Site is a former landfill, which was not listed as having been a source of odor complaints within the last three years by Cal Recycle (formerly the Integrated Waste Management Board). Additionally, BAAQMD was contacted to identify the odor complaint history of the existing Recology transfer station, and no records of complaints have been received for the past three years (BAAQMD, 2011a). Therefore, these two potential sources of odors are not documented as having generated objectionable odors affecting a substantial number of people. Since the DSP, DSP-V, and CPP scenarios do not include the proposed Recology expansion, the impact under these scenarios would be less than significant.

An onsite recycled water plant is proposed to be constructed to supply recycled water to Project Site development and discharge sewage in excess of the Baylands recycled water demand to a 78-inch San Francisco Public Utilities Commission sewer line along Sunnydale Avenue. Odor control using activated carbon canister is proposed to be provided for all air vented from lift stations. For treatment units all odor control systems are proposed to be two stage—biological technology such as bulk media bio-filtration followed by activated carbon. Screens and screening cleaning equipment would be enclosed in a building with negative pressure and air exhausted through a two-stage odor scrubbing system. Because of the potential for this project component to generate odors that may affect a substantial number of people (receptors would be as close as 400 feet to proposed residential units and about one-half mile from the nearest existing residential receptor), **Mitigation Measure 4.B-8** would require implementation of a Recycled Water Plant Odor Control Plan to reduce odor impacts.

Recology Expansion (CPP-V Scenario)

As noted in Chapter 3, *Project Description*, the CPP-V scenario includes a proposed modernization and expansion of the existing Recology facility which entails organics processing and anaerobic digestion. Consequently, depending on the proximity of these organics handling facilities, and the degree to which they are within an enclosed building and implement odor control strategies, objectionable odors could affect a substantial number of people. However, Recology has noted that organics throughput would not be increased as the result of proposed modernization and expansion. As a result, there would be no increase in odorous sources from the Recology facility.

The storage and transfer of green waste and food waste materials during anaerobic digestion and composting processes of Project Site development would be potential sources of odor at the adjacent land uses. BAAQMD maintains several rules regarding odors such as Regulation 1-301 (Public Nuisance) and Regulation 7 (Odorous Substances) that Project Site development, including the Recology expansion, must meet.

[14] A three-year time frame is used in relation to odor complaints consistent with BAAQMD recommendations.

Conclusion: Because Project Site uses, including the Recology expansion proposed as part of the CPP-V scenario, this impact would be less than significant under the DSP, DSP-V and CPP scenarios. **Mitigation Measure 4.B-8** is recommended to ensure that the impacts of the proposed recycled water plant are reduced to a less- than-significant level.

Mitigation

Mitigation Measure 4.B-8: Recycled Water Plant Odor Management Plan. Prior to the start of operation pursuant to issuance of a permit to operate from San Francisco Public Utilities Commission or RWQCB, the recycled water plant shall formulate and implement a progressive Odor Management Plan for review and comment by BAAQMD prior to review and approval by the City. The Odor Management Plan shall select a sufficient number of control measures from the following menu of options identified by BAAQMD to attain a performance standard which meets the odor detection thresholds of BAAQMD Regulation 7 as achieved and verified by the BAAQMD inspector.

Mitigation Measure Applicability by Scenario			
DSP	**DSP-V**	**CPP**	**CPP-V**
✓	✓	✓	✓
✓ = measure applies - = measure does not apply			

- Activated carbon filter/carbon adsorption
- Biofiltration/bio trickling filters
- Fine bubble aerator
- Hooded enclosures
- Wet and dry scrubbers
- Caustic and hypochlorite chemical scrubbers
- Ammonia scrubber
- Energy efficient blower system
- Thermal oxidizer
- Capping/covering storage basins and anaerobic ponds
- Mixed flow exhaust
- Wastewater circulation technology
- Exhaust stack and vent location with respect to receptors

Conclusion with Mitigation: With implementation of **Mitigation Measure 4.B-8**, impacts related to objectionable odors would be reduced to a less-than-significant level under the CPP-V. Therefore, impacts related to objectionable odors would be less than significant for Project Site development.

Impact 4.B-9: Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
SU	SU	SU	SU

S = Significant and Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CCP, and CPP-V

The most recently adopted air quality plan in the San Francisco Bay Area Basin is the *2010 Clean Air Plan*. The *2010 Clean Air Plan* is a roadmap showing how the San Francisco Bay Area will achieve compliance with the state's 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The control strategy includes stationary source control measures to be implemented through BAAQMD regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The *2010 Clean Air Plan* also represents the Bay Area Basin's most recent triennial assessment of the region's strategy to attain the state 1-hour ozone standard. In this, the *2010 Clean Air Plan* replaces the *2005 Ozone Strategy*. Under BAAQMD's updated 2012 methodology, a determination of consistency with the most recently adopted Clean Air Plan, currently the 2010 Clean Air Plan, must demonstrate that a (1) plan or project supports the primary goals of the Clean Air Plan, (2) includes applicable control measures of the Clean Air Plan, and (3) would not disrupt or hinder implementation of any control measures of the Clean Air Plan.

Criterion 1: Project Support of the Primary Goals of the 2010 Clean Air Plan

BAAQMD guidance indicates that any project (i.e., project or plan) that does not support the three primary goals of the Clean Air Plan would not be considered consistent with the Clean Air Plan. Specifically, if approval of a project would not result in significant and unavoidable air quality impacts, after application of all feasible mitigation, the project may be considered consistent with the Clean Air Plan.

As discussed in Impacts 4.B-2 and 4.B-4, Project Site development would result in significant and unavoidable emissions of criteria pollutants during both construction and operations. Consequently, applying methodology recently updated by BAAQMD, Project Site development would not support the primary goals of the Clean Air Plan.

Criterion 2: Plan Consistency with Control Measures Contained in the Clean Air Plan

Air pollutant emissions are a function of human activity. The 1988 California Clean Air Act, Section 40919(d) requires regions to implement "transportation control measures to substantially reduce the rate of increase in passenger vehicle trips and miles traveled."

The *Bay Area 2010 Clean Air Plan* contains 59 control measures aimed at reducing air pollution in the Bay Area Basin. Many (18) of these measures address stationary sources and will be implemented by BAAQMD using its permit authority and are therefore not suited to implementation through local planning efforts. Sixteen other measures are a draft list of measures

for further study and are not yet identified as feasible for implementation under the 2010 Clean Air Plan. The remaining 25 measures are identified in **Table 4.B-21**. This table identifies each Control Strategy and correlates it to specific elements of each Project Site scenario or explains why the Strategy does or does not apply to the Project Site development. This table shows that the Project Site development would be consistent with the Control Strategies contained in the 2010 Clean Air Plan for the San Francisco Bay Area Air Basin.

Criterion 3: Disruption or Hindrance of Applicable Control Measures

Table 4.B-21 shows that the Project Site development would not disrupt or hinder implementation of any Clean Air Plan control measures with the exception of not addressing Mobile Source Control Measures A-1 and A-2 which are identified to be added to Project Site development as mitigation.

BAAQMD has identified examples of how a plan may cause the disruption or delay of control measures, such as a project that may preclude an extension of a transit line or bike path or proposes excessive parking beyond parking requirements. Project Site development would include accommodation of new and improved bus and transit service and an intermodal transit station. Project Site development would also include improved pedestrian and bicycle facilities, and would also accommodate transit extensions. These elements of Project Site development demonstrate that control measure disruption or delay would not occur.

Trip generation estimates for Project Site development used in this analysis included adjustments for development scale, density, diversity of uses, distance to transit and design of Project development-related development, as well as a robust number of alternative transportation trips (walk, bike, and transit) and carpooling. Therefore, many key elements of alternative mode strategies have been incorporated into the trip generation assumptions. This amount of traffic reduction exceeds the best reduction estimates for TDM programs (BAAQMD, 2012b).

Conclusion: This impact would be significant under all four proposed development scenarios. **Mitigation Measure 4.B-9** is proposed to minimize conflicts with the Clean Air Plan.

Mitigation

Mitigation Measure 4.B-9: The following TDM measures shall be implemented:

Mitigation Measure Applicability by Scenario			
DSP	**DSP-V**	**CPP**	**CPP-V**
✓	✓	✓	✓
✓ = measure applies - = measure does not apply			

- Promote use of clean fuel-efficient vehicles through preferential parking and/or installation of charging stations.
- Promote zero-emission vehicles by providing a neighborhood electric vehicle program to reduce the need to have a car or second car vehicles as one potential element of a TDM program that would be required of all new developments.

TABLE 4.B-21
CONTROL STRATEGIES OF THE 2010 CLEAN AIR PLAN

2010 Clean Air Plan Control Strategy	Elements of Proposed Project Site Development Consistent with the Strategy or Explanation of Non-applicability
Transportation Control Measures	
TCM A: Improve Transit Services	Project Site development would support transit services including accommodation of bus rapid transit service and increasing Caltrain service at an intermodal transit station.
TCM B: Improve System Efficiency	Not Applicable: This measure addresses infrastructure improvements to increase operational efficiencies on freeways and transit service (such as common fare payment systems) and are geared toward regional transit agencies and Caltrans and not local government.
TCM C: Encourage Sustainable Travel Behavior (i.e., voluntary employer-based trip reduction program)	Project development under all four scenarios would require new site-specific development projects within the Project site that generate more than 100 peak our trips to establish a TDM program or pay an in-lieu impact fee. Developers may choose from a menu of TDM strategies including subsidies for site users who use transit or alternative modes of transportation.
TCM D: Support Focused Growth (Bicycle and Pedestrian friendliness)	Pedestrian and bicycle transportation modes will be facilitated by Project Site development. Provisions for alternative transportation modes include bicycle and pedestrian facilities for internal roadways as part of a comprehensive bicycle network for the area.
TCM E: Implement Pricing Strategies	Parking strategies would be included as part of TDM programs.
Mobile Source Control Measures	
MSM A-1: Promote Clean Fuel Efficient Vehicles	Not part of proposed Project Site development. **Mitigation Measure 4.B-9** added to address by identifying, as a TDM, preferential parking for alternative fueled vehicles as one potential element of a TDM program that would be required of all new developments.
MSM A-2: Zero Emission Vehicles	Not part of proposed Project Site development. **Mitigation Measure 4.B-9** added to address by identifying, as a TDM neighborhood electric vehicle programs to reduce the need to have a car or second car vehicles as one potential element of a TDM program that would be required of all new developments.
MSM A-3: Green Fleets	Not Applicable: Development of the Project Site would generally be retail, commercial or residential (DSP and DSP-V scenarios) in nature and unlikely to accommodate a land use requiring a fleet of vehicles. However, a green fleet could be used by a developer as a TDM program required under the Congestion Management Program. Recology currently operates 60 percent of its fleet with alternative fuels and its expansion would increase this percentage.
MSM A-4: Replacement or Repair of High-emitting Vehicles	Not Applicable: This Strategy addresses vehicle buy-back programs implemented by BAAQMD.
MSM B-1: Fleet Modernization for Medium and Heavy-Duty Trucks	Not Applicable: This Strategy addresses incentive programs for truck modernization which are implemented by BAAQMD or CARB.
MSM B-2: Low NOx retrofits in Heavy-Duty Trucks	Not Applicable: This Strategy addresses cash incentives for retrofits which are implemented by BAAQMD or CARB.
MSM B-3: Efficient Drive Trains	Not Applicable: This Strategy addresses development and demonstration programs in partnership with CARB and the California Energy Commission.
MSM C-1: Construction and Farming Equipment	Not Applicable: This Strategy addresses cash incentives for retrofits which are implemented by BAAQMD or CARB.
MSM C-2: Lawn & Garden Equipment	Not Applicable: This Strategy addresses voluntary exchange programs implemented by BAAQMD.
MSM C-3: Recreational Vessels	Not Applicable: This Strategy addresses voluntary exchange programs implemented by BAAQMD.

TABLE 4.B-21 (Continued)
CONTROL STRATEGIES OF THE 2010 CLEAN AIR PLAN

2010 Clean Air Plan Control Strategy	Elements of the Proposed Project Consistent with the Strategy or Explanation of Non-applicability
Land Use & Local Impact Measures	
LUM 1: Goods Movement	Project Site development would locate warehousing and industrial uses on the east side of the Project Site adjacent to the US Highway 101, allowing for direct freeway access of shipping trucks and avoiding truck routes through congested or sensitive areas.
LUM 2: Indirect Source Review Rule	Not Applicable: This Strategy addresses implementation of an indirect source Rule by BAAQMD.
LUM 3: Updated CEQA Guidelines	This Strategy addresses updating of the *CEQA Guidelines* by BAAQMD. These Guidelines were most recently updated in May of 2012, removing any recommendation of significance thresholds.
LUM 4: Land Use Guidance	This strategy addresses updating land use planning documents such as the proposed development scenarios and demonstrating consistency with air quality protection guidance such as the new BAAQMD *CEQA Guidelines* that are applied in this analysis.
LUM 5: Reduce Health Risk in Impacted Communities	The nearest "impacted community" identified in Figure 5-1 of the BAAQMD *CEQA Guidelines* would be single-family homes on Wheeler and Tocoloma Avenues in San Francisco are located approximately 800 feet northeast of proposed residential and retail land uses and 500 feet north of the proposed retail/Recology expansion area. As indicated in Impacts 4.B-3 and 4.B-5, health risk impacts of the Project Site development would be less than significant.
LUM 6: Enhanced Air Quality Monitoring	Not Applicable: This Strategy addresses air quality monitoring that is the purview of BAAQMD and/or CARB.
Energy & Climate Measures	
ECM 1: Energy Efficiency	Project Site development includes a Sustainable Framework Plan that includes building strategies to be incorporated into future development including LEED certification and guidelines addressing solar access, storm water and wastewater management, landscaping, lighting and green building materials.
ECM 2: Renewable Energy	See Measure ECM-1 above. Additionally, the DSP and DSP-V scenarios would allot 25 acres to renewable energy generation, while the CPP and CPP-V scenarios would also include renewable energy components.
ECM 3: Urban Heat Island Mitigation	Project Site development includes provision of a substantial amount of open space and would be required to provide substantial landscape improvements. Distribution of this open space as currently proposed along with the landscaping requirements that would be imposed for site-specific development projects within the Project Site would implement measure ECM-3.
ECM 4: Shade Tree Planting	The overall Landscape Guidelines of the Specific Plan prepared for the DSP and DSP-V scenarios provide for substantial tree planting throughout the Project Site's developed and open areas in order to enhance the area's visual quality and identity, visually buffer new development, and provide environmental benefits such as micro-climate control. The CPP and CPP-V scenarios are intended at a minimum to provide equivalent landscaping including tree planting.

SOURCE: ESA, 2012.

Conclusion with Mitigation: As discussed under Criterion 1, above, BAAQMD guidance indicates that if approval of a project would not result in significant and unavoidable air quality impacts, after application of all feasible mitigation, project site development may be considered consistent with the Clean Air Plan. Because all four of the proposed development scenarios would result in significant construction or operational emission impacts even with implementation of all feasible mitigation measures (**Mitigation Measures 4.B-2, 4.B-4,** and **4.B-9**), Project Site development would be considered to be inconsistent with *2010 Clean Air Plan*, and the resulting impact would be considered to be significant and unavoidable.

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