D. AIR QUALITY

This section describes the existing air quality setting for the Measure DD Implementation Project and has been prepared using methodologies and assumptions recommended in the air quality impact assessment guidelines of the Bay Area Air Quality Management District (BAAQMD).[1] In keeping with these guidelines, this chapter describes existing air quality, impacts of future traffic on local carbon monoxide levels, and impacts of land use-related vehicular emissions that have regional effects. Mitigation measures to reduce or eliminate potentially significant air quality impacts are identified, where appropriate.

1. Setting

The following discussion provides an overview of existing air quality conditions in the region and the Oakland area. Ambient standards and the regulatory framework relating to air quality are summarized. Climate, air quality conditions, and typical air pollutant types and sources are described.

a. Air Quality Standards, Regulatory Framework, Air Quality and Criteria Pollutants. Air quality standards, the regulatory framework, and State and federal attainment status are discussed below.

(1) Air Quality Standards. Both the State and federal governments have established health-based Ambient Air Quality Standards for six air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect public health and welfare with a reasonable margin of safety.

In addition to primary and secondary Ambient Air Quality Standards, the State of California has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase.

California Ambient Air Quality Standards and National Ambient Air Quality Standards for the criteria air pollutants are listed in Table IV.D-1. Health effects of these criteria pollutants are described in Table IV.D-2.

Table IV.D-1: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1-Hour	–	0.09 ppm
	8-Hour	0.08 ppm	0.07 ppm
Carbon Monoxide	8-Hour	9.0 ppm	9.0 ppm
	1-Hour	35.0 ppm	20.0 ppm
Nitrogen Dioxide	Annual	0.05 ppm	0.03 ppm
	1-Hour	–	0.18 ppm
Sulfur Dioxide	Annual	0.03 ppm	–
	24-Hour	0.14 ppm	0.04 ppm
	1-Hour	–	0.25 ppm
PM_{10}	Annual	-	20 µg/m3
	24-Hour	150 µg/m^3	50 µg/m3
$PM_{2.5}$	Annual	15 µg/m^3	12 µg/m3
	24-Hour	35 µg/m^3	–

Notes: ppm = parts per million
µg/m^3 = micrograms per cubic meter

Source: California Air Resources Board, 2007, *Ambient Air Quality Standards*.

[1] Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines.*

Table IV.D-2: Health Effects of Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate Matter ($PM_{2.5}$ and PM_{10})	• Increased respiratory disease • Lung damage • Premature death	• Cars and trucks, especially diesels • Fireplaces, wood stoves • Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	• Breathing difficulties • Lung damage	• Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon Monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen Dioxide (NO_2)	• Lung damage	• See carbon monoxide sources
Toxic Air Contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: CARB 2006.

(2) Overall Regulatory Setting. The Federal Clean Air Act governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the federal level, the United States Environmental Protection Agency (EPA) administers the Clean Air Act (CAA). The California Clean Air Act is administered by the California Air Resources Board (CARB) at the State level and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District (BAAQMD) regulates air quality at the regional level.

Federal Clean Air Act. The 1970 Federal Clean Air Act authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The Federal Clean Air Act Amendments of 1990 changed deadlines for attaining national standards as well as the remedial actions required of areas of the nation that exceed the standards. Under the Clean Air Act, State and local agencies in areas that exceed the national standards are required to develop State Implementation Plans to demonstrate how they will achieve the national standards for O_3 by specified dates. The Clean Air Act requires that projects receiving federal funds demonstrate conformity to the approved State Implementation Plan and local air quality attainment plan for the region. Conformity with the State Implementation Plan requirements also satisfies the Clean Air Act requirements.

California Clean Air Act. In 1988, the California Clean Air Act required that all air districts in the State endeavor to achieve and maintain California Ambient Air Quality Standards for CO, O_3, SO_2 and NO_2 by the earliest practical date. The California Clean Air Act provides districts with new authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each district plan is to achieve a 5 percent annual reduction, averaged over consecutive three-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. Additional physical or economic development within the region would tend to impede the emissions reduction goals of the California

Clean Air Act. Generally, the State standards for these pollutants are more stringent than the national standards.

(3) United States Environmental Protection Agency. The EPA is responsible for enforcing the Federal CAA. The EPA is also responsible for establishing the National Ambient Air Quality Standards (NAAQS). The NAAQS are required under the 1977 CAA and subsequent amendments. The EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California.

(4) California Air Resources Board. In California, the CARB, which is part of the California Environmental Protection Agency (Cal EPA), is responsible for meeting the state requirements of the Federal CAA, administering the California CAA, and establishing the California Ambient Air Quality Standards (CAAQS). The California CAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the California Ambient Air Quality Standards (CAAQS). The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. The CARB regulates mobile air pollution sources, such as motor vehicles. Automobiles sold in California must meet the stricter emission standards established by the CARB. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. The CARB established passenger vehicle fuel specifications, which became effective on March 1996. The CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

(5) Bay Area Air Quality Management District. The nine-county San Francisco Bay Area is considered, in air quality terms, an air basin. Overall, the air quality conditions in the San Francisco Bay Area are fairly good for a large metropolitan area due to favorable climate conditions that result in moderate temperatures and good ventilation. However, exceedances of air quality standards for ozone and respirable particulate matter pose challenges for air pollution control agencies. In addition, the CARB has identified the San Francisco Bay Area Air Basin as a transport contributor to adjacent air basins. So air pollutants emitted in the project area could contribute to air pollution problems in other areas of northern and central California.

The BAAQMD is primarily responsible for assuring that the National and State ambient air quality standards are attained and maintained in the Bay Area. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, conducting public education campaigns, as well as many other activities. The BAAQMD has jurisdiction over much of the nine-county Bay Area. San Francisco Bay air quality attainment status is shown in Table IV.D-3.

Table IV.D-3: San Francisco Bay Area Attainment Status

Pollutant	Averaging Time	California Standards[a]		National Standards[b]	
		Concentration	Attainment Status	Concentration	Attainment Status
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment[c]
	1-Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	Annual Mean	0.03 ppm (56 µg/m^3)		0.053 ppm (100 µg/m^3)	Attainment
	1-Hour	0.18 ppm (338 µg/m^3)	Attainment	Not Applicable	Not Applicable
Ozone (O_3)	8-Hour	0.07 ppm (137 µg/m^3)	Unclassified	0.08 ppm	Marginal
	1-Hour	0.09 ppm (180 µg/m^3)	Nonattainment	Not Applicable	Not Applicable[d]
Suspended Particulate Matter (PM_{10})	Annual Mean	20 µg/m^3	Nonattainment	Not Applicable	Not Applicable
	24-Hour	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified
Suspended Particulate Matter ($PM_{2.5}$)	Annual Mean	12 µg/m^3	Nonattainment	15 µg/m^3	Attainment
	24-Hour	Not Applicable	Not Applicable	35 µg/m^3	Unclassified
Sulfur Dioxide (SO_2)	Annual Mean	Not Applicable	Not Applicable	0.03 ppm (80 µg/m^3)	Attainment
	24-Hour	0.04 ppm (105 µg/m^3)	Attainment	0.14 ppm (365 µg/m^3)	Attainment
	1-Hour	0.25 ppm (655 µg/m^3)	Attainment	Not Applicable	Not Applicable

[a] California standards for O_3, CO (except Lake Tahoe), SO_2 (1-hour and 24-hour), NO_2 and PM_{10} are values that are not to be exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average, then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average.

[b] National standards other than for O_3 and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. For example, the O_3 standard is attained if, during the most recent 3- year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than 1.

[c] In April 1998, the Bay Area was redesignated to Attainment for the national 8-hour CO standard.

[d] The National 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

Lead (Pb) is not listed in the table because it has been in attainment since the 1980s.
ppm = parts per million g/m^3 = milligrams per cubic meter µg/m^3 = micrograms per cubic meter
Source: Bay Area Air Quality Management District, Bay Area Attainment Status, 2007.

(6) City of Oakland Air Quality Policies. The following are the air quality policies and action steps of the Open Space Conservation and Recreation (OSCAR) element of the City of Oakland's General Plan that apply to the proposed project:

- Policy CO-12.2: Coordinated Transportation Systems. Maintain a coordinated bus, rail, and ferry transit system which provides efficient service to major destinations and promotes alternatives to the single passenger auto.
  - Action CO-12.2.3: Improved Bicycle and Pedestrian Systems. Develop a viable bicycle and pedestrian circulation system, with routes providing safe, convenient access between residential neighborhoods and employment centers.
- Policy CO-12.6: Control of Dust Emissions. Require construction, demolition, and grading practices which minimize dust emissions.

These practices are currently required by the City and include the following:

- Avoiding earth moving and other major dust generating activities on windy days.
- Sprinkling unpaved construction areas with water during excavation, using reclaimed water where feasible. (Watering can reduce construction-related dust by 50 percent.)
- Covering stockpiled sand, soil, and other particulates with a tarp to avoid blowing dust.
- Covering trucks hauling dirt and debris to reduce spills. If spills do occur, they should be swept up promptly before materials become airborne.
- Preparing a comprehensive dust control program for major construction in populated areas or adjacent to sensitive uses like hospitals and schools.
- Operating construction and earth-moving equipment, including trucks, to minimize exhaust emissions.

(7) City of Oakland's Standard and Uniformly Applied Conditions of Approval. The City of Oakland's Standard and Uniformly Applied Conditions of Approval that would apply to the proposed project are listed below. Implementation of these Conditions of Approval would reduce or avoid a project's potential air quality impacts.

Condition 17: Dust Control. *Prior to issuance of a demolition, grading, or building permit.* During construction, the project applicant shall require the construction contractor to implement the following measures required as part of BAAQMD basic and enhanced dust control procedures required for construction sites. These include:

Condition 18: Construction Emissions. *Prior to issuance of a demolition, grading, or building permit.* To minimize construction equipment emissions during construction, the project applicant shall require the construction contractor to:

a) Demonstrate compliance with BAAQMD Regulation 2, Rule 1 (General Requirements) for all portable construction equipment subject to that rule. BAAQMD Regulation 2, Rule 1, provides the issuance of authorities to construct and permits to operate certain types of portable equipment used for construction purposes (e.g., gasoline or diesel-powered engines used in conjunction with power generation, pumps, compressors, and cranes) unless such equipment complies with all applicable requirements of the "CAPCOA" Portable Equipment Registration Rule" or with all applicable requirements of the Statewide Portable Equipment Registration Program. This exemption is provided in BAAQMD Rule 2-1-105.

b) Perform low- NOx tune-ups on all diesel-powered construction equipment greater than 50 horsepower (no more than 30 days prior to the start of use of that equipment). Periodic tune-ups (every 90 days) should be performed for such equipment used continuously during the construction period.

Condition 29: Asbestos Removal in Structures. ***Prior to issuance of a demolition permit.*** If asbestos is found to be present in building materials to be removed, demolition and disposal is required to be conducted in accordance with procedures specified by Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing) of BAAQMD regulations, as may be amended.

Condition 30: Asbestos Removal in Soil. *Prior to issuance of a demolition, grading, or building permit.* To minimize the release of naturally occurring asbestos in the soil during construction, the project applicant shall require the construction contractor to demonstrate compliance with BAAQMD Asbestos Airborne Toxic Control Measures for Construction, Grading, Quarrying and Surface Mining Operations (implementing CCR section 93105) for activities that disturb the soil, such as grading, etc. The appropriate requirements are based on the size of the disturbed area as described in Table IV.D-4.

BASIC (Applies to ALL construction sites)

a) Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.

b) Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).

c) Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.

d) Sweep daily (with water sweepers using reclaimed water if possible) all paved access roads, parking areas and staging areas at construction sites.

e) Sweep streets (with water sweepers using reclaimed water if possible) at the end of each day if visible soil material is carried onto adjacent paved roads.

f) Limit the amount of the disturbed area at any one time, where feasible.

g) Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

h) Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

i) Replant vegetation in disturbed areas as quickly as feasible.

j) Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).

k) Limit traffic speeds on unpaved roads to 15 miles per hour.

l) Clean off the tires or tracks of all trucks and equipment leaving any unpaved construction areas.

Table IV.D-4: Requirements for Asbestos Removal in Soil

Construction Grading Operation Requirements	
A. Minimum Requirements where area to be disturbed with Construction Grading Operations is 1 acre or less	
Administrative Requirements	a) No notification required to the BAAQMD office; unless b) Upon discovery of naturally occurring asbestos, serpentine, or ultramafic rock the project applicant must notify the BAAQMD's Air Pollution Control Officer (APCO) by the next business day.
Dust Control Requirements	a) Vehicle speed shall be less than or equal to 15 mph b) Sufficient water shall be applied to the area prior to disturbance to prevent visible emissions from crossing project boundaries. c) Areas to be graded or excavated shall be kept adequately wetted to prevent visible emissions from crossing project boundaries. d) Storage piles kept shall be adequately wetted, treated with dust suppressant, or covered when the material is not being added or removed. e) Equipment must be washed down before moving from the property onto paved roadway. f) Visible track-out on paved public road must be cleaned using wet sweeping or High Efficiency Particulate Filters (HEPA) filter equipped vacuum device within 24 hours. g) Implement the preceding dust control measures within 24 hours upon discovery of naturally occurring asbestos, serpentine, or ultramafic rock.
B. Minimum Requirements where area to be disturbed with Construction Operations is More than 1 acre	
Administrative (Prior to the start of work)	a) Asbestos Dust Mitigation Plan submitted to BAAQMD and approved prior to engaging in any construction or grading operation. b) The Asbestos Dust Minimization Plan provisions shall be implemented at the beginning and maintained throughout the duration of the construction or grading activity.
Dust Control Requirements	The Asbestos Dust Minimization Plan shall include one or more provisions to address the following topics: a) Control for traffic on on-site unpaved roads, parking lots, and staging areas shall include: limiting vehicle speed to less than 15 mph, and one or more of the following: watering every two hours of active operations or sufficiently often to keep area wetted; applying chemical dust suppressants consistent with manufacturer's directions; maintaining gravel cover with a silt content less than 5% and asbestos content less than .25% as determined using the asbestos bulk test method; or any other measure as effective as those listed above. b) Control for earthmoving activities shall include one or more of the following: pre-wetting the ground to the depth of the anticipated cuts; suspending grading operations when wind speeds are high enough to result in dust emissions crossing the property line despite applicable of dust measures; application of water prior to any land clearing; or any other measure as effective. c) Storage piles shall be kept adequately wetted or covered with tarps when the material is not

Table IV.D-4 *Continued*

Construction Grading Operation Requirements	
	being added or removed. d) Storage piles must be stabilized when inactive for more than 7 days by implementing one or more of the following: adequately wetting the site, establishing and maintaining surface crusting material, chemical dust suppressant or stabilizer, covering with tarps or vegetative cover, installation of wind barriers of 50% porosity around three sides of the pile areas, or any measure as effective. e) Equipment must be washed down before moving from the property onto paved roadway. i. Track-out prevention and control measures shall include: ii. Removal of visible track-out on paved public road at any location where vehicles exit the work site using wet sweeping or High Efficiency Particulate Air (HEPA) filter equipped vacuum device at least one time per day. Installation of one or more of the following track-out prevention devices: gravel pad, tire shaker, wheel wash system, not less than 50 feet of pavement extending from intersection with paved public road, or other measure as effective. f) Control for offsite-transport shall include the following: maintenance of trucks such that no spillage can occur from holes or openings in cargo compartments; loads are adequately wetted; and either covered with tarps or loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than 6" from the top and that at no point of the load extends above the top of the cargo compartment. g) Post project stabilization of disturbed surfaces shall occur using one or more of the following: establishing vegetative cover; placement of at least 3" of non- asbestos-containing material, paving, or other measure deemed sufficient to prevent 10 mph winds from causing visible emissions.
Administrative (After completion of work)	a) If required by the BAAQMD's APCO, the plan must include an air-monitoring component which shall specify the following: type of air sampling device; siting of the device; sampling of the device; sampling duration and frequency; and analytical method. b) The plan shall state the frequency with which the information will be reported to BAAQMD. c) The owner/operator shall keep maintain the following records for at least 7 years following completion of the project: results of any required air monitoring; documentation for any geologic evaluation conducted for the purposes of obtaining an exemption; and results of any bulk sampling conducted by the owner/operator to document applicability done or at the request of APCO.

ENHANCED (ALL "Basic" Controls listed above plus the following if the construction site is greater than 4 acres)

a) All "Basic" controls listed above, plus

b) Install sandbags or other erosion control measures to prevent silt runoff to public roadways

c) Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more).

d) Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such person shall be provided to the BAAQMD prior to the start of construction as well as posted on-site over the duration of construction.

e) Install appropriate wind breaks at the construction site to minimize wind blown dust.

Condition 54: Asbestos Remediation. *Prior to issuance of a demolition, grading, or building permit.* If asbestos-containing materials (ACM) are present, the project applicant shall submit specifications signed by a certified asbestos consultant for the removal, encapsulation, or enclosure of the identified ACM in accordance with all applicable laws and regulations, including but not necessarily limited to: California Code of Regulations, Title 8; Business and Professions Code; Division 3; California Health & Safety Code 25915-25919.7; and BAAQMD, Regulation 11, Rule 2, as may be amended.

b. Existing Climate and Air Quality. The following discussion provides brief summaries of regional air quality, local climate, and air quality, and air pollution climatology.

(1) Regional Air Quality. The City of Oakland is located in the San Francisco Bay Area, a large shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, a direct outlet to the Pacific Ocean. The second outlet extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

The City of Oakland is within the jurisdiction of the BAAQMD, which regulates air quality in the San Francisco Bay Area. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons. Ozone levels, measured by peak concentrations and the number of days over the State 1-hour standard, have declined substantially as a result of aggressive programs by the BAAQMD and other regional, State and federal agencies. The reduction of peak concentrations represents progress in improving public health; however the Bay Area still exceeds the State standard for 1-hour ozone. Levels of PM_{10} in the Bay Area have exceeded State standards at least two times per year during the past three years, and the Bay Area is considered a nonattainment area for this pollutant relative to the State standards. The Bay Area is an unclassified area for the federal PM_{10} standard.

No exceedances of the State or federal CO standards have been recorded at any of the region's monitoring stations since 1991. The Bay Area is currently considered a maintenance area for State and federal CO standards.

The BAAQMD's Bay Area 1991, 1994, 1997 and 2000 Clean Air Plans contain district-wide control measures to reduce CO and ozone precursor emissions (i.e., ROG and NOx). Ozone, in particular, results from the reaction of organic gases (ROG) and nitrogen oxide (NOx) in the atmosphere. To reduce ozone, its precursors (ROG and NOx) are regulated. The State standards for these pollutants are at least as stringent as the national standards. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

(2) Local Climate and Air Quality. Air quality is a function of both local climate and local sources of air pollution. The amount of a given air pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and/or dilute that pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and, for photochemical pollutants, sunshine.

The City of Oakland is located in the Northern Alameda and Western Contra Costa Region of the Basin. This climatological subregion stretches from Richmond to San Leandro. Its western boundary is defined by San Francisco Bay and its eastern boundary by the Oakland/Berkeley hills. The Oakland /Berkeley hills have a ridge line height of approximately 1,500 feet, a significant barrier to air flow. The most densely populated area of the subregion lies in a strip of land between San Francisco Bay and the lower hills.

In this area, marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland/Berkeley hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this subregion are from the west. At the northern end, near Richmond, prevailing winds are from the south-southwest.

Temperatures in this subregion have a narrow range due to the proximity of the moderating marine air. Maximum temperatures in summer average in the mid-70's, with minimums in the mid-50's. Winter highs are in the mid- to high-50's, with lows in the low- to mid-40's.

The air pollution potential is lowest for the parts of the subregion that are closest to the bay, due largely to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally causes elevated pollutant levels. The air pollution potential at the northern (Richmond) and southern (Oakland, San Leandro) parts of this subregion is marginally higher than communities directly east of the Golden Gate, because of the lower frequency of strong winds.

This subregion contains a variety of industrial air pollution sources. Some industries are quite close to residential areas. The subregion is also traversed by frequently congested major freeways. Traffic and congestion, and the motor vehicle emissions they generate, are increasing.

Pollutant monitoring results for the years 2004 to 2006 (see Tables IV.D-5 and IV.D-6) at the Oakland (Alice Street) and San Francisco (Arkansas Street) ambient air quality monitoring stations indicate that air quality in the project area has generally been good. As indicated in the monitoring results, one violation of State PM_{10} standard in the year 2004 was recorded during the three-year period and no violation of federal PM_{10} standard was recorded during the three-year period. The federal $PM_{2.5}$ standard was not exceeded during the three-year period. State 1-hour ozone standards have not been exceeded. The federal 8-hour ozone standards have not been exceeded within the past three years at these monitoring stations. CO, SO_2, and NO_2 standards also were not exceeded in this area during the three-year period.

c. Air Quality Issues. There are five key air quality issues in the Bay Area: CO hotspots, vehicle emissions, fugitive dust, odors, and construction equipment exhaust, all of which are described below.

(1) Local Carbon Monoxide Hotspots. Local air quality is most affected by CO emissions from motor vehicles. CO is typically the pollutant of greatest concern because it is created in abundance by motor vehicles and it does not readily disperse into the air. Because CO does not readily disperse, areas of vehicle congestion can create "pockets" of high CO concentration called "hot spots." These pockets have the potential to exceed the State 1-hour standard of 20.0 ppm and/or the 8-hour standard of 9.0 ppm.

While CO transport is limited, it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service

Table IV.D-5: Results from the Oakland Ambient Air Quality Monitoring Stations, 2004 to 2006

Year	Ozone			Carbon Monoxide		Nitrogen Dioxide*		PM_{10}*	
	Max. 1-Hour (ppm)	California D-O-S	Max. 1-Hour (ppm)	California D-O-S	Max. 1-Hour (ppm)	California D-O-S	Max. 24-Hour (mg/m^3)	National D-O-S	California D-O-S
2004	0.093	0	2.9	0	0.063	0	48.6	0	1
2005	0.058	0	2.5	0	0.066	0	44.6	0	0
2006	0.053	0	2.7	0	0.107	0	44.5	0	0

D-O-S = Days Over Standard ppm = parts per million
ppb = parts per billion mg/m^3 = milligrams per cubic meter
*Closest monitoring station located at San Francisco-Arkansas Street.

Source: U.S. EPA and CARB, 2004 to 2006.

Table IV.D-6: Results from the Oakland Ambient Air Quality Monitoring Station Exceeded Standards, 2004 to 2006

Year	Ozone		Carbon Monoxide		Sulfur Dioxide*		$PM_{2.5}$*		
	Max. 8-Hour (ppm)	National D-O-S	Max. 8-Hour (ppm)	California D-O-S	Max. 24-Hour (ppm)	California D-O-S	Max. 24-Hour (mg/m^3)	National D-O-S	California D-O-S
2004	0.059	0	2.21	0	0.006	0	45.8	0	0
2005	0.054	0	2.09	0	0.007	0	43.6	0	0
2006	0.046	0	1.74	0	0.007	0	31.5	0	NA

D-O-S = Days Over Standard ppm = parts per million mg/m^3 = milligrams per cubic meter

*Closest monitoring station located at San Francisco-Arkansas Street.

Source: U.S. EPA and CARB, 2004 to 2006.

or with extremely high traffic volumes. In areas with high ambient background CO concentration, modeling is recommended to determine a project's effect on local CO levels.

(2) Vehicle Emissions. Long-term air emission impacts are those associated with changes in automobile travel within the City. Mobile source emissions would result from vehicle trips associated with increased vehicular travel. As is true throughout much of the U.S., motor vehicle use is projected to increase substantially in the region. The BAAQMD, local jurisdictions, and other parties responsible for protecting public health and welfare will continue to seek ways of minimizing the air quality impacts of growth and development in order to avoid further exceedances of the standards.

(3) Fugitive Dust. Fugitive dust emissions are generally associated with demolition, land clearing, exposure of soils to the air, and cut and fill operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions.

The U.S. EPA has developed an approximate emission factor for construction-related emissions of total suspended particulate of 1.2 tons per acre per month of activity. This factor assumes a moderate activity level, moderate silt content in soils being disturbed, and a semi-arid climate. The California Air Resources Board estimates that 64 percent of construction-related total suspended particulate

emissions is PM_{10}. Therefore, the emission factors for uncontrolled construction-related PM_{10} emissions are:

- 0.77 tons per acre per month of PM_{10}; or
- 51 pounds per acre per day of PM_{10}.

However, construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. There are a number of feasible control measures that can be reasonably implemented to significantly reduce PM_{10} emissions from construction. Rather than attempting to provide detailed quantification of anticipated construction emissions from projects, the BAAQMD suggests the following:

> "The determination of significance with respect to construction emissions should be based on a consideration of the control measures to be implemented. From the District's perspective, quantification of emissions is not necessary, although a lead agency may elect to do so. If all of the control measures indicated as appropriate, depending on the size of the project, are implemented, then air pollution from emissions from construction activities would be considered a less-than-significant impact."[2]

(4) Odors. Odors are also an important element of local air quality conditions. Specific activities can raise concerns on the part of nearby neighbors. Major sources of odors include restaurants, manufacturing plants, and agricultural operations. Other odor producers include the industrial facilities within the region. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors often exceeds regulatory thresholds.

(5) Construction Equipment Exhaust. Construction activities cause combustion emissions from utility engines, heavy-duty construction vehicles, equipment hauling materials to and from construction sites, and motor vehicles transporting construction crews. Exhaust emissions from construction activities vary daily as construction activity levels change. The use of construction equipment results in localized exhaust emissions.

2. Impacts and Mitigation Measures

This section discusses potential impacts to air quality that could result from implementation of Measure DD. The section begins with the significance criteria, which establish the thresholds used to determine whether an impact is significant. The latter part of this section presents the impacts associated with Measure DD and identifies mitigation measures, as appropriate.

a. Criteria of Significance. Implementation of the project components would have a significant impact on air quality if it would:

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

[22] Bay Area Air Quality Management District, 1966. *BAAQMD CEQA Guidelines Assessing the Air Quality Impacts of Projects and Plans*. April. (Amended in December 1999.)

3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
4) Expose sensitive receptors to substantial pollutant concentrations;
5) Frequently create substantial objectionable odors affecting a substantial number of people;
6) Contribute to CO concentrations exceeding the State AAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour (Note: Pursuant to BAAQMD, localized carbon monoxide concentrations should be estimated for projects in which (1) vehicle emissions of CO would exceed 550 lb/day; (2) intersections or roadway links would decline to LOS E or F; (3) intersections operating at LOS E or F will have reduced LOS; or (4) traffic volume increase on nearby roadways by 10% or more unless the increase in traffic volume is less than 100 vehicles per hour);
7) Result in total emissions of ROG, NO_x, or PM_{10} of 15 tons per year or greater, or 80 pounds (36 kilograms) per day or greater;
8) Result in potential to expose persons to substantial levels of Toxic Air Contaminants (TAC), such that the probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million;
9) Result in ground level concentrations of non-carcinogenic TACs such that the Hazard Index would be greater than 1 for the MEI; or
10) Result in a substantial increase in diesel emissions.

b. Impacts and Mitigation Measures Applicable to all Project Components. The air quality impacts that would result from implementation of Measure DD would be essentially the same for each of the four project components as described below for both less-than-significant and significant impacts.

(1) Consistency with the Air Quality Plan. The most recent BAAQMD plan for attaining California Ambient Air Quality Standards, the Bay Area 2005 Ozone Strategy, was adopted by BAAQMD on January 4, 2006. The 2005 Ozone Strategy is the fourth triennial update of the BAAQMD's original 1991 Clean Air Plan (CAP). The 2005 Ozone Strategy demonstrates how the San Francisco Bay Area will achieve compliance with the State one-hour air quality standard for ozone and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The Ozone Strategy also includes stationary source control measures, mobile source control measures and transportation control measures. Although it is only required to address ozone pollution and associated control measures, the Ozone Strategy also discusses particulate matter pollution and reduction measures. Clean air plan projections are based on analysis and forecasts of air pollutant emissions throughout the entire region. The forecasts rely on projections of population and employment made by the Association of Bay Area Governments (ABAG), which are based on land use projections made by local jurisdictions (e.g., General Plan process). Most important are transportation control measures included in the CAP that the BAAQMD relies on local jurisdictions to implement. The Measure DD Implementation Project would not result in substantial increases in population and employment and is therefore consistent with ABAG projections used for *2005 Ozone Attainment Strategy*. As a result, the proposed project would be consistent with regional air quality planning and not result in a significant cumulative impact to air quality.

(2) Contribute to air quality violation. The City of Oakland is considered a non-attainment area for ozone and PM_{10} and $PM_{2.5}$. As noted above, the Bay Area 2005 Ozone Strategy, which also

addresses particulate matter, is the air quality plan that applies to projects within the City of Oakland. The primary sources of ozone are internal combustion engines and power plants. Therefore, the proposed project would contribute to regional ozone emissions in the form of emissions from construction vehicles. The project would contribute to particulate matter emissions through construction vehicle emissions and the disturbance of soil within the project site during the construction period.

Table IV.D-7: Summary of Potential Impacts – Air Quality

	Project Group[a]			
Would the Project:	**Group 1 Lake Merritt**	**Group 2 Waterfront Trail**	**Group 3 Recreational Facilities**	**Group 4 City-wide Creeks**
1) Conflict with or obstruct implementation of the applicable air quality plan?	O	O	O	O
2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	O	O	O	O
3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	O	O	O	O
4) Expose sensitive receptors to substantial pollutant concentrations?	O	O	O	O
5) Frequently create substantial objectionable odors affecting a substantial number of people?	O	O	O	O
6) Contribute to CO concentrations exceeding the State AAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour ?	O	O	O	O
7) Result in total emissions of ROG, NOx, or PM_{10} of 15 tons per year or greater or 80 pounds (36 kilograms) per day or greater?	O	O	O	O
8) Result in potential to expose persons to substantial levels of toxic air contaminants, such that the probability of contracting cancer for the maximally exposed individual exceeds 10 in 1 million?	O	O	O	O
9) Result in ground level concentrations of non-carcinogenic TACs such that the hazard index would be greater than 1 for the MEI?	O	O	O	O
10) Result in a substantial increase in diesel emissions?	O	O	O	O

[a] The Lake Merritt and Waterfront Trail groups are analyzed at the project level. The Recreational Facilities and City-wide Creeks groups are analyzed at the program level. The level of impact and the proposed mitigation measure, if any, are identified as follows:

== No impact

○ Less-than-Significant or Less-than-Significant with standard Conditions of Approval
◉ Reduced to Less-than-Significant after recommended mitigation
● Significant
NA Not Applicable
AIR-1, etc. identifies the mitigation measure, if any, that addresses the impact and reduces it to a level that is less than significant.

Source: LSA Associates, 2007.

Construction activities would vary with each component of Measures DD. Construction activities for various project components may include the use of earthmoving equipment and water and pick-up trucks. Ground disturbance and the operation of motorized construction vehicles would incrementally increase ozone and particulate matter emissions in the region during the project construction period.

Temporary, construction period air quality impacts (for all pollutants) are considered less-than-significant if standard BAAQMD particulate matter control measures are implemented. Implementation of the Standard Conditions of Approval 17 and 18, which includes the required BAAQMD control measures, would reduce the project's construction period air quality impacts (including construction period conflicts with the 2005 Ozone Strategy) to a less-than-significant level.

Refer to Section IV.C, Transportation, Circulation, and Parking for a discussion of the project's impacts related to traffic. As described in that section, the proposed project is not expected to generate a substantial number of vehicle trips. Therefore, the project's operational-period ozone contribution would be less-than-significant, and the project would not conflict with the 2005 Ozone Strategy. The improvement of bicycle access and facilities, which is one of the key objectives of the project, is a transportation control measure included in the 2005 Ozone Strategy, and could improve air quality in the basin during the long-term.

(3) Cumulative Increase of Any Criteria Pollutant. Cumulative air quality impacts associated with criteria pollutants are evaluated based on both a quantification of the project-related air quality impacts and the consistency of the project with local and regional air quality plans (i.e., the *Oakland General Plan* and the Bay Area 2005 Ozone Strategy). At the local level, future cumulative traffic conditions would not result in any violation of the carbon monoxide standard. As a result, there would not be a cumulative impact to local air quality. Emissions of pollutants that affect regional air quality (i.e., ozone precursors and PM_{10}) associated with the project are predicted to be below the significant thresholds established by the BAAQMD, and therefore, would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is nonattainment under an applicable federal or state ambient air quality standard. This potential impact would be less than significant.

(4) Exposure of sensitive receptors to substantial pollutant concentrations. Sensitive receptors are facilities that house or attract children, the elderly, and people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.

The operation of the project components of Measure DD would not generate pollutants and thus would not expose sensitive receptors to substantial pollutant concentrations. Construction of project components would temporarily increase localized emissions. As noted above however, temporary,

construction period air quality impacts (for all pollutants) are considered less-than-significant if standard BAAQMD particulate matter control measures are implemented. Implementation of Standard Conditions of Approval 17 and 18 would reduce construction emissions to a less-than-significant level.

(5) Objectionable Odors. The operation of the project components of Measure DD would not generate objectionable odors. Typically, major sources of odors include restaurants, manufacturing plants, and landfills. The proposed project components include physical improvements to existing parks; acquisition of land for new parks; development of new parks and recreation facilities; clean water measures; restoration and rehabilitation of recreation buildings; and implementation of creek and waterway protection and restoration projects which are not expected to generate objectionable odors. Therefore, the project would not frequently create substantial objectionable odors affecting a substantial number of people. This potential impact would be less than significant.

(6) CO Concentrations. Vehicular traffic associated with Measure DD would emit carbon monoxide (CO) into the air along roadway segments and near intersections. As previously described, because CO does not readily disperse, areas of vehicle congestion can create pockets of high CO concentrations, called "hot spots." Typically, high CO concentrations are associated with roadways or intersections operating at deficient levels of service (LOS) or with extremely high traffic volumes. An analysis of the potential CO hotspots was performed for intersections within the areas surrounding the Measure DD components.

Table IV.D-8 lists the 1-hour and 8-hour CO concentrations for the existing (2006) conditions and existing plus projects at 18 intersections in the project study area. Table IV.D-9 lists the future (2025) concentrations with and without the project.

Based on the methodology suggested by the U.S. EPA and the California Department of Transportation, the second highest CO concentrations monitored at the nearest air monitoring station in the past 2 years (in this case 3.3 ppm for the 1-hour period and 2.4 ppm for the 8-hour period) were used as the background CO concentrations. Emission factors for study scenarios were obtained from the latest confirmed CARB data.

Table IV.D-8 shows that 1-hour and 8-hour CO concentrations for all existing, with- and without-the-project would be below the federal and State CO standards. The 1-hour CO levels range from 4.0 to 6.9 ppm, much lower than the State CO standard of 20 ppm. The 8-hour CO levels range from 2.9 ppm to 4.9 ppm, also much lower then the State and federal standard of 9 ppm.

Table IV.D-9 shows that all cumulative (2025) 1-hour and 8-hour CO concentrations with the project would be below the federal and State CO standards. The 1-hour CO levels range from 3.4 ppm to 4.2 ppm, which are much lower then the State standard of 20 ppm. The 8-hour CO levels would range from 2.5 ppm to 3.0 ppm, which are much lower than the State standard of 9 ppm.

Based on the results of the traffic analysis, in some cases intersection traffic volumes were reduced with implementation of the proposed project. For those intersections, CO concentrations were also reduced with implementation of the project.

Table IV.D-8: CO Concentrations for Existing and Existing Plus Project Conditions

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1 hr/8 hr (ppm)	Existing Plus Project/Existing 1-Hour CO Concentration (ppm)	Existing Plus Project/Existing 8-Hour CO Concentration (ppm)	Exceeds State Standards	
					1-Hr	8-Hr
Grand Avenue & Santa Clara Avenue	17	0.1 / 0.0	5.9 / 5.8	4.2 / 4.2	No	No
	15	0.1 / 0.1	5.7 / 5.6	4.1 / 4.0	No	No
	15	0.0 / 0.0	5.6 / 5.6	4.0 / 4.0	No	No
	12	0.2 / 0.1	5.6 / 5.4	4.0 / 3.9	No	No
Grand Avenue & MacArthur Boulevard	14	0.0 / 0.0	6.0 / 6.0	4.3 / 4.3	No	No
	14	0.1 / 0.0	5.9 / 5.8	4.2 / 4.2	No	No
	10	0.2 / 0.1	5.9 / 5.7	4.2 / 4.1	No	No
	10	0.3 / 0.2	5.9 / 5.6	4.2 / 4.0	No	No
Grand Avenue & El Embarcadero (WB)	10	1.2 / 0.8	6.5 / 5.3	4.6 / 3.8	No	No
	10	0.9 / 0.6	6.0 / 5.1	4.3 / 3.7	No	No
	10	0.8 / 0.5	5.9 / 5.1	4.2 / 3.7	No	No
	10	0.7 / 0.5	5.8 / 5.1	4.2 / 3.7	No	No
Lakeshore Drive & Lake Park Avenue	14	0.4 / 0.3	5.8 / 5.4	4.2 / 3.9	No	No
	13	0.5 / 0.4	5.7 / 5.2	4.1 / 3.7	No	No
	12	0.4 / 0.3	5.6 / 5.2	4.0 / 3.7	No	No
	10	0.5 / 0.3	5.6 / 5.1	4.0 / 3.7	No	No
Lakeshore Drive & MacArthur Boulevard	14	0.4 / 0.3	7.3 / 6.9	5.2 / 4.9	No	No
	14	0.2 / 0.1	7.0 / 6.8	5.0 / 4.9	No	No
	14	0.4 / 0.3	7.0 / 6.6	5.0 / 4.7	No	No
	10	-0.2 / -0.1	6.1 / 6.3	4.4 / 4.5	No	No
Lakeshore Drive & East 18th Street	14	0.6 / 0.4	6.0 / 5.4	4.3 / 3.9	No	No
	14	0.6 / 0.4	5.9 / 5.3	4.2 / 3.8	No	No
	12	0.3 / 0.2	5.5 / 5.2	3.9 / 3.7	No	No
	10	0.5 / 0.3	5.5 / 5.0	3.9 / 3.6	No	No
1st Avenue & International Boulevard	14	0.9 / 0.6	6.9 / 6.0	4.9 / 4.3	No	No
	14	0.8 / 0.6	6.7 / 5.9	4.8 / 4.2	No	No
	14	1.1 / 0.8	6.6 / 5.5	4.7 / 3.9	No	No
	12	0.5 / 0.4	6.0 / 5.5	4.3 / 3.9	No	No
12th Street & East 12th Street	14	0.2 / 0.1	6.9 / 6.7	4.9 / 4.8	No	No
	14	0.6 / 0.4	6.7 / 6.1	4.8 / 4.4	No	No
	12	0.5 / 0.3	6.6 / 6.1	4.7 / 4.4	No	No
	8	0.2 / 0.1	6.0 / 5.8	4.3 / 4.2	No	No
2nd Avenue & East 15th Street	8	0.0 / 0.0	4.1 / 4.1	3.0 / 3.0	No	No
	8	0.0 / 0.0	4.0 / 4.0	2.9 / 2.9	No	No
	8	0.0 / 0.0	4.0 / 4.0	2.9 / 2.9	No	No
	8	0.0 / 0.0	4.0 / 4.0	2.9 / 2.9	No	No
5th Avenue & East 12th Street	8	-0.1 / 0.0	4.8 / 4.9	3.5 / 3.5	No	No
	8	-0.1 / -0.1	4.7 / 4.8	3.4 / 3.5	No	No
	8	0.0 / 0.0	4.7 / 4.7	3.4 / 3.4	No	No
	8	0.0 / 0.0	4.6 / 4.6	3.3 / 3.3	No	No
5th Avenue & East 8th Street	17	0.0 / 0.0	5.0 / 5.0	3.6 / 3.6	No	No
	17	0.0 / 0.0	4.9 / 4.9	3.5 / 3.5	No	No
	16	0.0 / 0.0	4.8 / 4.8	3.5 / 3.5	No	No
	16	0.1 / 0.1	4.8 / 4.7	3.5 / 3.4	No	No
5th Avenue & Embarcadero Drive	10	0.0 / 0.0	5.0 / 5.0	3.6 / 3.6	No	No
	10	0.0 / 0.0	4.9 / 4.9	3.5 / 3.5	No	No
	8	0.0 / 0.0	4.8 / 4.8	3.5 / 3.5	No	No
	8	0.0 / 0.0	4.7 / 4.7	3.4 / 3.4	No	No

Table IV.D-8 *Continued*

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1 hr/8 hr (ppm)	Existing Plus Project/Existing 1-Hour CO Concentration (ppm)	Existing Plus Project/Existing 8-Hour CO Concentration (ppm)	Exceeds State Standards	
					1-Hr	8-Hr
Harrison Street & 27th Street	14	0.2 / 0.1	5.9 / 5.7	4.2 / 4.1	No	No
	14	0.1 / 0.1	5.7 / 5.6	4.1 / 4.0	No	No
	14	0.2 / 0.1	5.6 / 5.4	4.0 / 3.9	No	No
	14	0.3 / 0.2	5.5 / 5.2	3.9 / 3.7	No	No
Harrison Street & Grand Avenue	17	-0.1 / 0.0	6.4 / 6.5	4.6 / 4.6	No	No
	17	-0.1 / -0.1	6.3 / 6.4	4.5 / 4.6	No	No
	17	0.2 / 0.1	6.2 / 6.0	4.4 / 4.3	No	No
	16	0.2 / 0.1	6.2 / 6.0	4.4 / 4.3	No	No
Lakeside Drive & Jackson Street	10	0.4 / 0.3	5.3 / 4.9	3.8 / 3.5	No	No
	10	0.4 / 0.3	5.1 / 4.7	3.7 / 3.4	No	No
	10	0.4 / 0.3	5.1 / 4.7	3.7 / 3.4	No	No
	10	0.4 / 0.3	5.0 / 4.6	3.6 / 3.3	No	No
Lakeside Drive & 14th Street	14	0.0 / 0.0	4.8 / 4.8	3.5 / 3.5	No	No
	10	-0.1 / -0.1	4.7 / 4.8	3.4 / 3.5	No	No
	10	0.0 / 0.0	4.7 / 4.7	3.4 / 3.4	No	No
	10	0.0 / 0.0	4.7 / 4.7	3.4 / 3.4	No	No
Oak Street & 10th Street	14	0.1 / 0.1	4.6 / 4.5	3.3 / 3.2	No	No
	14	0.1 / 0.1	4.4 / 4.3	3.2 / 3.1	No	No
	14	0.1 / 0.1	4.4 / 4.3	3.2 / 3.1	No	No
	8	-0.1 / -0.1	4.2 / 4.3	3.0 / 3.1	No	No
Madison Street & 7th Street East	17	0.0 / 0.0	5.5 / 5.5	3.9 / 3.9	No	No
	16	0.0 / 0.0	5.1 / 5.1	3.7 / 3.7	No	No
	13	0.0 / 0.0	5.0 / 5.0	3.6 / 3.6	No	No
	13	0.0 / 0.0	5.0 / 5.0	3.6 / 3.6	No	No
Oak Street & 7th Street East	16	0.2 / 0.1	5.3 / 5.1	3.8 / 3.7	No	No
	14	0.0 / 0.0	5.1 / 5.1	3.7 / 3.7	No	No
	13	0.1 / 0.1	5.0 / 4.9	3.6 / 3.5	No	No
	7	-0.1 / -0.1	4.7 / 4.8	3.4 / 3.5	No	No

Includes ambient 1-hour concentration of 3.3 ppm and ambient 8-hour concentration of 2.4 ppm. Measured at the 822 Alice St., Oakland,CA, AQ Station (Alameda County).

Table IV.D-9: CO Concentrations for Cumulative (2025) Plus Project Conditions

Intersection	Receptor Distance to Road Centerline (Meters)	Cumulative (2025) Plus Project 1-Hour CO Concentration (ppm)	Cumulative (2025) Plus Project 8-Hour CO Concentration (ppm)	Exceeds State Standards	
				1-Hr	8-Hr
Grand Avenue & Santa Clara Avenue	17	3.8	2.8	No	No
	15	3.8	2.8	No	No
	15	3.8	2.8	No	No
	12	3.8	2.8	No	No
Grand Avenue & MacArthur Boulevard	14	3.9	2.8	No	No
	14	3.9	2.8	No	No
	10	3.9	2.8	No	No
	10	3.9	2.8	No	No
Grand Avenue & El Embarcadero (WB)	10	3.9	2.8	No	No
	10	3.8	2.8	No	No
	10	3.8	2.8	No	No
	10	3.7	2.7	No	No
Lakeshore Drive & Lake Park Avenue	14	3.9	2.8	No	No
	13	3.8	2.8	No	No
	12	3.8	2.8	No	No
	10	3.8	2.8	No	No
Lakeshore Drive & MacArthur Boulevard	14	4.0	2.9	No	No
	14	4.0	2.9	No	No
	14	4.0	2.9	No	No
	10	3.9	2.8	No	No
Lakeshore Drive & East 18th Street	14	3.7	2.7	No	No
	14	3.7	2.7	No	No
	12	3.6	2.6	No	No
	10	3.6	2.6	No	No
1st Avenue & International Boulevard	14	4.0	2.9	No	No
	14	3.8	2.8	No	No
	14	3.8	2.8	No	No
	12	3.8	2.8	No	No
12th Street & East 12th Street	14	4.2	3.0	No	No
	14	4.1	3.0	No	No
	12	4.1	3.0	No	No
	8	3.9	2.8	No	No
2nd Avenue & East 15th Street	8	3.5	2.5	No	No
	8	3.5	2.5	No	No
	8	3.4	2.5	No	No
	8	3.4	2.5	No	No
5th Avenue & East 8th Street	8	3.9	2.8	No	No
	8	3.8	2.8	No	No
	8	3.8	2.8	No	No
	8	3.7	2.7	No	No
5th Avenue & Embarcadero Drive	17	3.9	2.8	No	No
	17	3.8	2.8	No	No
	16	3.8	2.8	No	No
	16	3.7	2.7	No	No
Harrison Street & 27th Street	10	3.8	2.8	No	No
	10	3.8	2.8	No	No
	8	3.8	2.8	No	No
	8	3.8	2.8	No	No
Harrison Street & Grand Avenue	14	4.0	2.9	No	No

Table IV.D-9 *Continued*

Intersection	Receptor Distance to Road Centerline (Meters)	Cumulative (2025) Plus Project 1-Hour CO Concentration (ppm)	Cumulative (2025) Plus Project 8-Hour CO Concentration (ppm)	Exceeds State Standards	
				1-Hr	8-Hr
	14	3.9	2.8	No	No
	14	3.9	2.8	No	No
	14	3.9	2.8	No	No
Lakeside Drive & Jackson Street	17	3.7	2.7	No	No
	17	3.6	2.6	No	No
	17	3.6	2.6	No	No
	16	3.6	2.6	No	No
Lakeside Drive & 14th Street	10	3.7	2.7	No	No
	10	3.7	2.7	No	No
	10	3.7	2.7	No	No
	10	3.6	2.6	No	No
Oak Street & 10th Street	14	3.6	2.6	No	No
	10	3.6	2.6	No	No
	10	3.5	2.5	No	No
	10	3.5	2.5	No	No
Madison Street & 7th Street East	14	4.1	3.0	No	No
	14	4.0	2.9	No	No
	14	4.0	2.9	No	No
	8	3.9	2.8	No	No
Oak Street & 7th Street East	17	3.9	2.8	No	No
	16	3.9	2.8	No	No
	13	3.8	2.8	No	No
	13	3.8	2.8	No	No

Includes ambient 1-hour concentration of 3.3 ppm and ambient 8-hour concentration of 2.4 ppm. Measured at the 822 Alice St., Oakland,CA, AQ Station (Alameda County).

(7) Regional Air Emissions. Regional air emissions are generated by land use development projects, primarily by the motor vehicle trips generated by the projects. These are often referred to as "indirect sources" and include projects such as shopping centers, office buildings, and residential developments. The proposed project components include physical improvements to existing parks; acquisition of land for new parks; development of new parks and recreation facilities; clean water measures; restoration and rehabilitation of recreation buildings; and implementation of creek and waterway protection and restoration projects. These projects are not expected to generate significant vehicle trips; therefore, regional emissions associated with the implementation of Measure DD would be less than significant.

(8) Toxic Air Contaminants (Significance Criteria 8-10). The CARB has identified diesel engine particulate matter as a toxic air contaminant. Facilities that may have substantial diesel exhaust emissions include the following: truck stop, warehouse/distribution center, large retail or industrial facility, high volume transit center, school with high volume of bus traffic, high volume freeway, high volume arterial/roadway with high level of diesel traffic. The proposed project components include physical improvements to existing parks; acquisition of land for new parks; development of new parks and recreation facilities; clean water measures; restoration and rehabilitation of recreation buildings; and implementation of creek and waterway protection and restoration projects.

Implementation of the proposed project would not locate sensitive receptors near facilities with substantial diesel exhaust or expose existing sensitive receptors to substantial diesel exhaust emissions. Construction of the proposed project components could require the use of diesel operated engines; however, the construction duration would be temporary. Health risk assessments related to toxic air contaminants are based on exposure over a 70-year period. Due to the temporary nature of construction, exhaust from construction equipment would not be considered a significant health risk.

c. Impacts and Mitigation Measures Unique to Specific Project Components. There are no specific project component impacts associated with air quality.