E. AIR QUALITY

This section describes existing air quality conditions in the region and the Oakland area. Impacts that may result from Project are identified, and mitigation measures to reduce potential impacts are recommended where feasible.

1. Setting

This setting subsection begins with a brief review of the five key issues addressed in this air quality analysis. It then summarizes the ambient standards, regulatory framework, and attainment status of the San Francisco Bay Area. The subsection concludes with the area's existing climate and general air quality conditions.

a. Air Quality Issues. Five key air quality issues are of greatest concern in this analysis: construction equipment exhaust, CO hotspots, vehicle emissions, fugitive dust, and odors.

(1) Construction Equipment Exhaust. Construction activities cause combustion emissions from utility engines, heavy-duty construction vehicles, equipment which hauls materials to and from construction sites and motor vehicles that transport 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) 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, soils types, specific construction operations, and weather conditions. Particulate matter (or PM_{10}) is the specific emission of concern. However, there are a number of feasible control measures that can be 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 Districts' 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."[1]

(3) 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.

(4) 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

[1] Bay Area Air Quality Management District, 1996. *BAAQMD CEQA Guidelines Assessing the Air Quality Impacts of Projects and Plans*. April. (Amended in December 1999.)

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."

While CO transport is limited, it does disperse 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 affecting 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 or with extremely high traffic volumes.

(5) Odors. Odors are also an important element of local air quality conditions. Specific activities allowed within many land use categories can raise concerns on the part of nearby neighbors. Major sources of odors include restaurants, manufacturing plants, and agricultural operations, though industrial facilities within Oakland can also produce unacceptable levels of odors. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors often exceeds regulatory thresholds and complaints result.

b. Air Quality Standards, Regulatory Framework, and Attainment Status. 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 the health and welfare of the populace 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 from Stage One to Stage Three.

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

(2) Regulatory Framework. The Bay Area Air Quality Management District (BAAQMD) is primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as for monitoring ambient pollutant concentrations. Indirect sources are facilities that do not have equipment that directly emits substantial amounts of pollution, but that attract large numbers of mobile sources of pollution. The California Air Resources Board and the U.S. Environmental Protection Agency regulate direct emissions from motor vehicles.

Table IV.E-1: Air Quality Standards

Pollutant	Averaging Time	California Standards	Federal Standards
Carbon Monoxide (CO)	8-hour	9 ppm	9 ppm
	1-hour	20 ppm	35 ppm
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	0.053 ppm
	1-hour	0.25 ppm	—
Ozone (O_3)	1-hour	0.09 ppm	0.12 ppm
	8-hour	—	0.08 ppm
Lead (Pb)	Quarterly	—	1.5 $\mu g/m^3$
	30-day	1.5 $\mu g/m^3$	—
Particulate Matter (PM_{10})	24-hour	50 $\mu g/m^3$	150 $\mu g/m^3$
	Annual Arithmetic Mean	20 $\mu g/m^3$	50 $\mu g/m^3$
Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 $\mu g/m^3$	15 $\mu g/m^3$
	24-hour	—	65 $\mu g/m^3$
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	0.03 ppm
	24-hour	0.04 ppm	0.14 ppm
	3-hour	—	0.50 ppm
	1-hour	0.25 ppm	—

Notes:
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

Source: U.S. Environmental Protection Agency and California Air Resources Board, 2003.

Federal Clean Air Act. The Federal 1970 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 Ambient Air Quality 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 Ambient Air Quality Standards are required to develop State Implementation Plans to show how they will achieve the National Ambient Air Quality Standards for ozone (O_3) by specific 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 would satisfy 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 O_3, CO, SO_2 and NO_2 by the earliest practical date. Plans for attaining California Ambient Air Quality Standards were submitted to the California Air Resource Board by June 30, 1991, 1994, 1997 and 2000. The California Clean Air Act provided districts with new authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from

Table IV.E-2: Health Effects of Major Criteria Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Fine Particulate Matter (PM_{10})	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardiorespiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter ($PM_{2.5}$)	• Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also formed from photochemical reactions of other pollutants, including NO_X, sulfur oxides, and organics.	• Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

transportation and area-wide emission sources. Each district plan is to achieve a 5 percent annual reduction, averaged over consecutive 3-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.

(3) Attainment Status Designations. The California Air Resources Board is required to designate areas of the state as attainment, nonattainment or unclassified for any state standard. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data does not support either an attainment or nonattainment status. The California Clear Air Act divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The U.S. Environmental Protection Agency designates areas for O_3, CO, and NO_2 as either "does not meet the primary standards," or "cannot be classified" or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified" or "better than national standards." In 1991, new nonattainment designations were assigned to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

Table IV.E-3 provides a summary of the attainment status for the San Francisco Bay Area with respect to national and State ambient air quality standards.

c. Existing Climate and Air Quality. The following provides a discussion of the regional air quality, local climate and air quality in the Northern Alameda and Western Contra Costa Counties subregion of the San Francisco Bay Area, and air pollution climatology.

(1) Air Pollution Climatology. 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.

(2) 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: the Golden Gate, a direct outlet to the Pacific Ocean, and 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 District 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. In June 1995, the Bay Area was designated as being in attainment for the federal O_3 standard. However, the U.S. Environmental Protection Agency changed the Bay Area back to nonattainment status in August 1998 due to new exceedances of the standard in 1995 and 1996. The BAAQMD submitted an Ozone

Table IV.E-3: Bay Area Attainment Status as of January 2003

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	Not Applicable	Not Applicable	0.053 ppm (100 µg/m^3)	Attainment
	1-Hour	0.25 ppm (470 µg/m^3)	Attainment	Not Applicable	Not Applicable
Ozone (O_3)	8-Hour	Not Applicable	Not Applicable	0.08 ppm	Unclassified
	1-Hour	0.09 ppm (180 µg/m^3)	Nonattainment	0.12 ppm (235 µg/m^3)	Nonattainment[d]
Particulate Matter (PM_{10})	Annual Mean	20 µg/m^3	Nonattainment[e]	50 µg/m^3	Attainment
	24-Hour	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified
Particulate Matter – Fine ($PM_{2.5}$)	Annual Mean	12 µg/m^3	Nonattainment	15 µg/m^3	Unclassified
	24-Hour	Not Applicable	Not Applicable	65 µg/m^3	Unclassified
Sulfur Dioxide (SO_2)	Annual Mean	Not Applicable	Not Applicable	80 µg/m^3 (0.03 ppm)	Attainment
	24-Hour	0.04 ppm (105 µg/m^3)	Attainment	365 µg/m^3 (0.14 ppm)	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 ARB 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 one.

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

[d] In June 1995, the Bay Area was redesignated to Attainment for the national O_3 standard. However, the Environmental Protection Agency changed the Bay Area back to Nonattainment in August 1998, due to new exceedances in 1995 and 1996.

[e] In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}. As of July 2003, the BAAQMD did not have sufficient monitoring data for $PM_{2.5}$ to determine the region's attainment status with respect to these national standards. The EPA plans to propose an implementation rule for $PM_{2.5}$ in September 2003 and issue the final $PM_{2.5}$ implementation rule in September 2004. The EPA is then expected to make final designations in December 2004.

Notes: Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s.

ppm = parts per million
mg/m^3 = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

Source: Bay Area Air Quality Management District, Bay Area Attainment Status as of January 2003, and Henry Hilken of the District.

Attainment Plan (1999 Plan) to the U.S. Environmental Protection Agency in August of 1999 to set policies and guidelines aimed at reducing O_3 in the Bay Area by November 15, 2000. The U.S. Environmental Protection Agency approved parts and disapproved parts of the 1999 Ozone Plan for failing to ensure attainment status for O_3. As a result, the U.S. Environmental Protection Agency recommended to the federal government that it withhold transportation funding for specific projects within the Bay Area. The BAAQMD has developed and adopted a new plan (2001 Ozone Plan) to correct the deficiencies of the 1999 Ozone Plan and respond to the finding of failure to achieve attainment status for O_3. The new plan was adopted in October 2001 by the BAAQMD's Governing Board and was approved by the California Air Resources Board in November 2001. As of January 2003, the plan is still under review by the Environmental Protection Agency.

Levels of PM_{10} in the Bay Area currently exceed California Clean Air Act standards and, therefore, the area is considered a nonattainment area for this pollutant relative to the State standards. PM_{10} levels monitored at the Fremont (Chapel Way) and Concord (2975 Treat Boulevard) stations (two closest monitoring stations with PM_{10} data) exceeded the State's standard in 2000 and 2001, but were below the State's standard in 2002. The Bay Area is an unclassified area for the federal PM_{10} standard. The federal standard was not exceeded at either of these monitoring stations in the past three years (2000 through 2002).

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 Clean Air Plans for 1991, 1994, 1997 and 2000 contain districtwide control measures to reduce CO and O_3 precursor emissions. Generally, the State standards for these pollutants are more stringent than the national standards.

Exceedances of air quality standards in the San Francisco Bay Area occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

(3) Local Climate and Air Quality. The Project site is located in the Northern Alameda and Western Contra Costa Counties subregion of the San Francisco Bay Area. 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.

In this subregion, 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.

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. Average 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 those 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 nearer the Golden Gate, because of the lower frequency of strong winds.

This subregion contains a variety of industrial air pollution sources, some of which 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 2000 to 2002 (see Tables IV.E-4 through IV.E-7) at the Oakland (Alice Street), Concord (2975 Treat Boulevard),[2] Oakland (6701 International Boulevard), and Fremont (Chapel Way)[3] ambient air quality monitoring stations indicate that air quality in the Project area has generally been good in recent years. As indicated in the monitoring results, 18 or fewer violations per year of State PM_{10} standard during the 3-year period were recorded and no violations of federal PM_{10} standard were recorded. The federal $PM_{2.5}$ standard was not exceeded during the 3-year period and no data is available for the number of days the State $PM_{2.5}$ standard was exceeded. State and federal 1-hour O_3 standards have not been exceeded at these monitoring stations. Federal 8-hour O_3 standards have not been exceeded at these monitoring stations in the past three years. CO and NO_2 standards were not exceeded in this area during the 3-year period. SO_2 monitored at the Oakland-International Boulevard station did not exceed the State or federal standards in the past three years.

2. Impacts and Mitigation Measures

This section evaluates potential air quality impacts associated with the Specific Plan and identifies mitigation measures to address these impacts, as necessary.

a. Significance Criteria. The Uptown Project would result in a significant impact if it would:

- 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 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);
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people;
- Contribute to CO concentrations exceeding the State ambient air quality standard of 9 ppm averaged over 8 hours and 20 ppm for 1 hour;

[2] PM_{10} and $PM_{2.5}$ data only.

[3] Ibid.

Table IV.E-4: Results from the Oakland-Alice Street Ambient Air Quality Monitoring Station Exceeded Standards, 2000 to 2002

	Ozone			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		
Year	Max. 1-Hour (pphm)	National D-O-S	California D-O-S	Max. 1-Hour (ppm)	California D-O-S	Max. 1-Hour (pphm)	California D-O-S	Annual Geometric Mean (mg/m^3)	Exceed National Standard	Exceed California Standard
2000	7.2	0	0	5.4	0	NM	NM	18	No	No
2001	6.9	0	0	5.0	0	NM	NM	20	No	No
2002	5.2	0	0	4.4	0	NM	NM	21	0	Yes

Notes: D-O-S = Days Over Standard
pphm = parts per hundred million
ppm = parts per million
ppb = parts per billion
mg/m^3 = milligrams per cubic meter
NM = not monitored
PM_{10} levels obtained from Concord-2975 Treat Boulevard station

Source: Bay Area Air Quality Management District, 2003. *Annual Bay Area Air Pollution Summaries*. Website: www.baaqmd.gov/pie/apsums.htm.

Table IV.E-5: Results from the Oakland-Alice Street Ambient Air Quality Monitoring Station Exceeded Standards, 2000 to 2002

	Ozone		Carbon Monoxide		Sulfur Dioxide		$PM_{2.5}$		
Year	Max. 8-Hour (pphm)	National D-O-S	Max. 8-Hour (ppm)	California D-O-S	Max. 24-Hour (pphm)	California D-O-S	Annual Geometric Mean (mg/m^3)	Exceed National Standard	Exceed California Standard
2000	4.8	0	3.3	0	NM	NM	11	No	No
2001	4.5	0	4.0	0	NM	NM	10	No	No
2002	4.3	0	3.3	0	NM	NM	13	No	Yes

Notes: D-O-S = Days Over Standard
pphm = parts per hundred million
ppm = parts per million
ppb = parts per billion
mg/m^3 = milligrams per cubic meter
NM = not monitored
ND = no data available
$PM_{2.5}$ levels obtained from Concord-2975 Treat Boulevard station

Source: Bay Area Air Quality Management District, 2003. *Annual Bay Area Air Pollution Summaries*. Website: www.baaqmd.gov/pie/apsums.htm.

Table IV.E-6: Results from the Oakland-6701 International Boulevard Ambient Air Quality Monitoring Station Exceeded Standards, 2000 to 2002

	Ozone			Carbon Monoxide		Nitrogen Dioxide		PM_{10}		
Year	Max. 1-Hour (pphm)	National D-O-S	California D-O-S	Max. 1-Hour (ppm)	California D-O-S	Max. 1-Hour (pphm)	California D-O-S	Annual Geometric Mean (mg/m^3)	Exceed National Standard	Exceed California Standard
2000	NM	NM	NM	NM	NM	NM	NM	22	No	Yes
2001	3.8	0	0	5.8	0	6.2	0	23	No	Yes
2002	8.4	0	0	7.7	0	8.0	0	23	No	Yes

Notes: D-O-S = Days Over Standard
pphm = parts per hundred million
ppm = parts per million
ppb = parts per billion
mg/m^3 = milligrams per cubic meter
NM = not monitored
PM_{10} levels obtained at the Fremont-Chapel Way station

Source: Bay Area Air Quality Management District, 2003. *Annual Bay Area Air Pollution Summaries*. Website: www.baaqmd.gov/pie/apsums.htm.

Table IV.E -7: Results from the Oakland-6701 International Boulevard Ambient Air Quality Monitoring Station Exceeded Standards, 2000 to 2002

	Ozone		Carbon Monoxide		Sulfur Dioxide		$PM_{2.5}$		
Year	Max. 8-Hour (pphm)	National D-O-S	Max. 8-Hour (ppm)	California D-O-S	Max. 24-Hour (pphm)	California D-O-S	Annual Geometric Mean (mg/m^3)	Exceed National Standard	Exceed California Standard
2000	NM	NM	NM	NM	NM	NM	11	No	No
2001	3.4	0	3.2	0	0.4	0	12	No	No
2002	5.6	0	5.1	0	0.6	0	13	No	Yes

Notes: D-O-S = Days Over Standard
pphm = parts per hundred million
ppm = parts per million
ppb = parts per billion
mg/m^3 = milligrams per cubic meter
NM = not monitored
ND = no data available
$PM_{2.5}$ levels obtained from the Fremont-Chapel Way station

Source: Bay Area Air Quality Management District, 2003. *Annual Bay Area Air Pollution Summaries*. Website: www.baaqmd.gov/pie/apsums.htm.

- 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;
- Result in potential to expose persons to substantial levels of TACs, such that the probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million;
- Result in ground level concentrations of non-carcinogenic toxic air contaminants such that the Hazard Index would be greater than 1 for the MEI; or
- Result in a fundamental conflict with the local general plan, when the general plan is consistent with the regional air quality plan. When the general plan fundamentally conflicts with the regional air quality plan, then if the contribution of the proposed Project is cumulatively considerable when analyzed the impact to air quality should be considered significant.

For project-level impact analysis, the BAAQMD provides various thresholds and tests of significance. For ROG, NOx and PM_{10}, a net increase of 80 pounds per day is considered significant, while for CO, an increase of 550 pounds per day would be considered significant if it leads to or contributes to CO concentrations exceeding the State Ambient Air Quality Standard of 9 ppm averaged over 8 hours and 20 ppm for 1 hour (i.e., if it creates a "hot spot"). Generally, if a project results in an increase in ROG, NOx, or PM_{10} of more than 80 pounds per day, then it would also be considered to contribute considerably to a significant cumulative effect. For projects that would not lead to a significant increase of ROG, NOx, or PM_{10} emissions, the cumulative effect is evaluated based on a determination of the consistency of the project with the regional Clean Air Plan. These criteria recommended by the BAAQMD are consistent with the criteria used by the City of Oakland, listed above.

Impacts from $PM_{2.5}$ emissions have not been analyzed quantitatively as there are no recommended significance thresholds from the BAAQMD or the City of Oakland. Also, the air quality models that are used to estimate emissions of ROG, NOx, CO and PM_{10} currently do not have the capability to estimate $PM_{2.5}$ separately. Therefore, impacts from $PM_{2.5}$ emissions from the Project (particularly the diesel particulate matter) have been analyzed qualitatively.

b. Less-than-Significant Air Quality Impacts.

(1) Local Plan Consistency. The population in the City of Oakland is expected to grow from 399,484 people under the existing condition (2000) to 443,203 people in year 2025. The projected growth is 43,717 people over a 23-year period. This amounts to approximately a 0.4 percent annual growth rate.

The Bay Area 2000 Clean Air Plan (CAP) does not list growth or growth rates in population or vehicle miles traveled (VMT) by each City. However, based on the Association of Bay Area Governments (ABAG) projections, total population in Alameda County is projected to grow from 1,453,000 people in year 2000 to 1,556,600 people in year 2010. This growth rate is approximately 7.1 percent over a 10-year period, or approximately 0.7 percent a year.

Figure 3 on page 6 of the Bay Area 2000 CAP depicts the growth in population, vehicles, and vehicle miles traveled in the Bay Area. This figure shows that VMT growth (80 percent growth from 1980 to 2006, or approximately 2.3 percent a year) outpaced population growth (40 percent growth from 1980

to 2006, or approximately 1.3 percent a year) in the Bay Area. Although there is no comparable figure to show such growth for the City of Oakland, it is assumed that the City generally falls within such growth rates.

The proposed Project will add 1,300 residential units and 1,050 student/faculty beds to the City. The proposed Project will increase the City's population by approximately 3,266 people. This growth is consistent with what is anticipated under the City's General Plan and falls within the population projections prepared by ABAG. The proposed Uptown Project will not require any amendments to the City's General Plan. As a result, it will not conflict with the Bay Area 2000 CAP. In addition, the proposed Project is a mixed-use development along a major set of transit corridors. Therefore, the Project will be moving residents closer to the downtown work area potentially reducing the vehicle miles traveled within the City.

(2) Carbon Monoxide Concentrations. Traffic generated by the proposed Project would contribute to local carbon monoxide concentrations. On the local scale the pollutant of greatest concern is carbon monoxide. Concentrations of this pollutant are related to the levels of traffic and congestion along streets and at intersections. The CALINE-4 computer simulation model was used to evaluate nine intersections near the Project site. These intersections were selected on the basis of PM peak hour level of service.

The results of the CALINE-4 modeling for the nine selected intersections are shown in Table IV.E-8. Concentrations are shown for three scenarios:

- Existing Traffic (Year 2003)
- Year 2025 Without Project
- Year 2025 With Project

The predicted 1-hour concentrations in Table IV.E-8 are to be compared to the State and federal ambient 1-hour air quality standards of 20 ppm and 35 ppm, respectively. Predicted 8-hour concentrations in Table IV.E-8 are to be compared to the State and federal 8-hour standards of 9 ppm. Existing concentrations meet all ambient air quality standards.

Concentrations in 2025 are predicted to be lower than year 2003 concentrations, despite increased traffic, due to gradual reductions in emission rates for vehicles resulting from State-mandated emission control programs for automobiles. Concentrations are anticipated to remain well below the applicable standards. The impact of the proposed Project on local carbon monoxide concentrations would be considered less than significant and no mitigation would be required.

(3) Odor Nuisance Problems. Though offensive odors from stationary sources rarely cause any physical harm, they still remain unpleasant and can lead to public distress generating citizen complaints to local governments. The occurrence and severity of odor impacts depend on the nature, frequency and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between a receptor and the source to an acceptable level will mitigate odor impacts. No new stationary odor sources are proposed as part of the proposed Project. Therefore, there would be no odor-related impacts on sensitive receptors.

Table IV.E -8: Worst-Case Carbon Monoxide Concentrations near Selected Intersections[a]

Intersection	Existing (2003)		Year 2025 Without Project		Year 2025 With Project	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
San Pablo Avenue and 27th Street	6.9	5.2	5.6	4.3	5.5	4.3
San Pablo Avenue and TLB Way (20th Street)[c]	6.3	4.8	5.2	4.0	5.3	4.1
Telegraph Avenue and TLB Way (20th Street)	6.3	4.8	5.4	4.2	5.5	4.3
Telegraph Avenue and William Street	5.9	4.5	5.4	4.2	5.4	4.2
Telegraph Avenue and 19th Street	6.2	4.7	5.5	4.3	5.5	4.3
Broadway and Grand Avenue	8.6	6.4	5.5	4.3	5.7	4.4
Frontage Road and Grand Avenue	7.5	5.7	5.6	4.3	5.7	4.4
Harrison Street and Grand Avenue	8.6	6.4	5.7	4.4	5.7	4.4
Castro Avenue and Grand Avenue	7.1	5.4	5.4	4.2	5.4	4.2
Most Stringent Standard	**20.0[b]**	**9.0**	**20.0**	**9.0**	**20.0**	**9.0**

[a] All amounts in parts per million (ppm).
[b] State standard.
[c] TLB Way = Thomas L. Berkley Way.

Source: LSA Associates, Inc., August 2003.

c. Significant Air Quality Impacts and Mitigation Measures. The proposed Project would result in two significant impacts related to air quality as described below.

Impact AIR-1: Activities associated with demolition, site preparation and construction would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. (S)

Project-related construction activities would include site preparation, earthmoving and general construction. Site preparation includes activities such as general land clearing and grubbing. Earthmoving activities include cut and fill operations, trenching, soil compaction and grading. General construction includes adding improvements such as roadway surfaces, structures and facilities. The emissions generated from these construction activities include:

- Dust (including PM_{10} and $PM_{2.5}$) primarily from "fugitive" sources (i.e., emissions released through means other than through a stack or tailpipe) such as soil disturbance;
- Combustion emissions of criteria air pollutants (ROG, NO_x, CO, SO_x, PM_{10}) primarily from operation of heavy equipment construction machinery (primarily diesel operated), portable auxiliary equipment and construction worker automobile trips (primarily gasoline operated); and
- Evaporative emissions (ROG) from asphalt paving and architectural coating applications.

Demolition may result in airborne entrainment of asbestos, a toxic air contaminant, particularly where structures built prior to 1980 are being demolished. Some structural components of the buildings to be demolished may contain hazardous materials such as asbestos used in insulation, fire retardants, or building materials (floor tile, roofing, etc.) and lead-based paint. If asbestos were found to be present

in building materials to be removed, demolition and disposal would be required to be conducted in accordance with procedures specified by Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing) of BAAQMD's regulations. Therefore, the required compliance with existing regulations would ensure that the potential for public health hazards associated with airborne asbestos fibers or lead dust would be at a less than significant level.

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM_{10} and $PM_{2.5}$ concentrations may be adversely affected on a temporary and intermittent basis during the construction period. In addition, the fugitive dust generated by construction would include not only PM_{10}, but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts. The BAAQMD's approach to analyses of fugitive dust emissions from construction is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions. The District considers any project's construction related impacts to be less than significant if the required dust-control measures are implemented. Without these measures, the impact is generally considered to be significant, particularly if sensitive land uses are located in the project vicinity. In the case of this Project, residential land uses are located as close as 50 feet from the boundaries of the Project site. Therefore, without mitigation, the impact of fugitive dust emissions would be considered significant.

Construction activities would also result in the emission of ROG, NO_x, CO, SO_x and PM_{10} from equipment exhaust, construction-related vehicular activity and construction worker automobile trips. Emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers. Criteria pollutant emissions of ROG and NO_x from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during Project construction. BAAQMD CEQA Guidelines recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that is the basis for regional air quality plans. Therefore, construction emissions of ROG and NO_x are not expected to impede attainment or maintenance of ozone standards in the Bay Area (BAQMD, 1999). The impact of construction equipment exhaust emissions would therefore be less than significant.

During construction various diesel-powered vehicles and equipment would be in use. In 1998 the CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant (TAC). CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.[4] High volume freeways, stationary diesel engines and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truckstop) were identified as having the highest associated risk. BAAQMD CEQA Guidelines identify the following types of facilities as a potential for exposing sensitive receptors to high levels of diesel exhaust:

- Truck stop
- Warehouse/Distribution Center
- Large retail or industrial facility

[4] California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000.

- High volume transit center
- School with high volume of bus traffic
- High volume highway
- High volume arterial/roadway with high level of diesel traffic

Health risks from Toxic Air Contaminants are a function of both concentration and duration of exposure. Unlike the above types of sources, construction diesel emissions are temporary, affecting an area for a period of days or perhaps weeks. Additionally, construction related sources are mobile and transient in nature, and the bulk of the emission occurs within the project site at a substantial distance from nearby receptors. As a result, health risks from construction emissions of diesel particulate are not considered significant.

Mitigation Measure AIR-1: Implementation of the following mitigation measures would reduce this impact to a less-than-significant level.

- The basic and enhanced control measures listed in Table IV.E-9 shall be implemented during construction of the proposed Project.
- Any temporary haul roads to the soil stockpile area shall be routed away from existing neighboring land uses. Any temporary haul roads shall be surfaced with gravel and regularly watered to control dust or treated with an appropriate dust suppressant.
- Water sprays shall be utilized to control dust when material is being added or removed from the stockpile. When the stockpile is undisturbed for more than 1 week, the storage pile shall be treated with a dust suppressant or crusting agent to eliminate wind-blown dust generation.
- All neighboring properties located within 500 feet of property lines shall be provided with the name and phone number of a designated construction dust control coordinator who will respond to complaints within 24 hours by suspending dust-producing activities or providing additional personnel or equipment for dust control as deemed necessary. The phone number of the BAAQMD pollution complaints contact shall also be provided. The dust control coordinator shall be on-call during construction hours. The coordinator shall keep a log of complaints received and remedial actions taken in response. This log shall be made available to City staff upon its request.

The above mitigation measures include all feasible measures for construction emissions identified by the BAAQMD. According to the District's threshold of significance for construction impacts, implementation of the measures would reduce construction impacts of the proposed Project to a less-than-significant level. (LTS)

Impact AIR-2: Development of the Uptown Project would result in increased regional emissions of criteria air pollutants exceeding BAAQMD Thresholds. (S)

New emissions from the proposed Project would be from direct and indirect sources. Direct emissions consist of emissions from on-site combustion for space- and water-heating, fireplace use, and other minor sources. The overwhelming source of emissions would be indirect (i.e., related to auto and truck traffic generated by Project land uses).

Table IV.E-9: Feasible Control Measures for Construction Emissions of PM_{10}

Basic Control Measures - The following controls should be implemented at all construction sites.
• Water all active construction areas at least twice daily.
• Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
• Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
• Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
• Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
Enhanced Control Measures - The following measures should be implemented at construction sites greater than 4 acres in area.
• All "Basic" control measures listed above.
• Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
• Enclose, cover, water twice daily or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.)
• Limit traffic speeds on unpaved roads to 15 mph.
• Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
• Replant vegetation in disturbed areas as quickly as possible.
Optional Control Measures - The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors or which for any other reason may warrant additional emissions reductions.
• Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
• Install wind breaks, or plant trees/vegetative wind breaks at windward side(s) of construction areas.
• Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.
• Limit the area subject to excavation, grading, and other construction activity at any one time.

Source: BAAQMD, 1999.

The URBEMIS2002 model was used to calculate emissions from all vehicle trips to or from the Project site. This analysis was based on Project buildout and assumed a year 2005 vehicle population.

Daily emissions associated with Project vehicle use are shown in Table IV.E-10. Pollutants shown include carbon monoxide, reactive organic gases (ROG) and oxides of nitrogen (NO_x) (two precursors of ozone), and PM_{10} (particulate matter, 10 micron). As shown, emissions associated with the proposed Project would exceed the BAAQMD thresholds of significance.

Table IV.E-10: Regional Vehicular Emissions

	Emissions (pounds/day)			
	ROG	**CO**	**NO_x**	**PM_{10}**
Project Emissions	131.2	1,446.0	183.2	99.6
BAAQMD Thresholds	80	550	80	80

Source: LSA Associates, Inc., 2003.

Once operational, the primary source of $PM_{2.5}$ emissions from the Project would be from the diesel fueled trucks delivering materials and services to businesses of the Project area. However, since no large commercial retail spaces are proposed as part of this Project, the number of truck trips associated with Project operation is not anticipated to be significant (less than six). Additionally, the number of truck trips would be distributed throughout the day and would culminate at different points

of the Project site at various businesses. Therefore, no single sensitive receptor would be exposed to emissions from all the truck trips during the day. Given the minimal number of truck trips generated by the Project, concentration of $PM_{2.5}$ emissions from the activity of truck trips in the Project area would not exceed the ambient air quality standards. Therefore, impact of $PM_{2.5}$ emissions from the Project would be less than significant.

Mitigation Measure AIR-2: To the extent permitted by law, the Uptown Project shall be required to implement Transportation Control Measures (TCMs) as recommended by the BAAQMD. However, the City of Oakland will implement as feasible on the basis that this Project is an infill mixed-used development project that in and of itself supports many Smart Growth Principals. Measures that the City may require the Project to implement, or that are already proposed as part of the Project, include the following:

- *Transit Measures:* (i) Construct transit facilities such as bus turnouts/bus bulbs, benches, shelters, etc. (Effectiveness 0.5 percent - 2 percent of all trips, BAAQMD *CEQA Guidelines*); (ii) Design and locate buildings to facilitate transit access (e.g., locate building entrances near transit stops, eliminate building setbacks, etc.) (Effectiveness 0.1 percent - 0.5 percent of all trips, BAAQMD *CEQA Guidelines*).
- *Services Measures:* (i) Provide on-site shops and services for employees, such as cafeteria, bank/ATM, dry cleaners, convenience market, etc. (Effectiveness 0.5 percent - 5 percent of work trips, BAAQMD *CEQA Guidelines*); (ii) Provide on-site child care, or contribute to off-site childcare within walking distance. (Effectiveness 0.1 percent - 1 percent of work trips, BAAQMD *CEQA Guidelines*).
- *Bicycle and Pedestrian Measures:* (i) Provide secure, weather-protected bicycle parking for employees (Effectiveness 0.5 percent - 2 percent of work trips, BAAQMD *CEQA Guidelines*); (ii) Provide safe, direct access for bicyclists to adjacent bicycle routes (Effectiveness 0.5 percent - 2 percent of work trips, BAAQMD *CEQA Guidelines*); (iii) Provide showers and lockers for employees bicycling or walking to work (Effectiveness 0.5 percent - 2 percent of work trips, BAAQMD *CEQA Guidelines*); (iv) Provide secure short-term bicycle parking for retail customers or non-commute trips (Effectiveness 1 percent - 2 percent of non-work trips, BAAQMD *CEQA Guidelines*); (v) Provide direct, safe, attractive pedestrian access from Planning Area to transit stops and adjacent development (Effectiveness 0.5 percent - 1.5 percent of all trips, BAAQMD *CEQA Guidelines*).

Implementation of the measures detailed above would help minimize this impact, but not reduce it to a less-than-significant level. Therefore, Impact AIR-2 will remain significant and unavoidable. (SU)